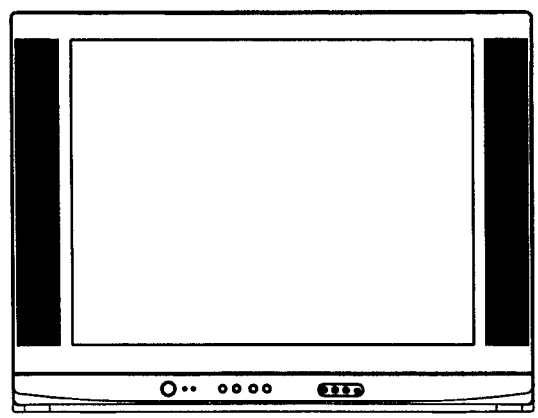
SERVICE MANUAL

ORION

TV-719 SI / TV-719

COLOR TELEVISION RECEIVER



ORIGINAL
CHASSIS CODE A

Best. Nr. SM719

Design and specifications are subject to change without notice.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE
   You can find it in the back of your unit.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.
When replacing an IC's or transistors, use only specified silicon grease (YG6260M).
Remove all old silicon before applying new silicon.

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GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size		28 inch / 660.0mmV
			CRT Type		Normal
			Deflection		110 degree
			Magnetic Field BV/BH		+0.45G/0.18G
		Color System			PAL
		Speaker			2 Speaker
			Position		Front
			Size		2.0 x 4.7 Inch
			Impedance		8 ohm
		Sound Output	MAX		5.0+5.0 W
			10%(Typical)		4.0+4.0 W
		PAL60Hz			Yes
G-2	Tuning System	Broadcasting System			CCIR System B/G
		Tuner and Receive CH	System		1Tuner
			Destination		CCIR Hyper
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 ohm
			CH Coverage		E2 - E4, X - Z+2, S1 - S10, E5 - E12, S11 - S41, E21 - E69
		Intermediate Frequency	Picture(FP)		38.90MHz
			Sound(FS)		33.4MHz
			FP-FS		5.5MHz
		Preset CH			80
		Stereo/Dual TV Sound			Yes
		Tuner Sound Muting			Yes
G-3	Power	Power Source	AC		230V AC 50Hz
			DC		
		Power Consumption		at AC	
					78 W at AC 230 V 50 Hz
			Stand by (at AC)		4 W at AC 230 V 50 Hz
			Per Year		-- kWh/Year
		Protector	Power Fuse		Yes
			Safety Circuit		Yes
			IC Protector(Micro Fuse)		No
G-4	Regulation		Safety		CE (EN60065:98)
			Radiation		CE
			X-Radiation		PTB
G-5	Temperature		Operation		+5°C ~ +40°C
			Storage		-20°C ~ +60°C
G-6	Operating Humidity				Less than 80% RH
G-7	On Screen Display	Menu			Yes
			Menu Type		Character
			Picture		Yes
				Contrast	Yes
				Brightness	Yes
				Colour	Yes
				Tint	No
				Sharpness	Yes
			Audio		Yes
				Bass	Yes
				Treble	Yes
				Balance	Yes
				BBE On/Off	No
				Stable Sound On/Off	No
			CH Tuning		Yes
				Manual	Yes
				Auto	Yes
				CH Allocation	Yes
			Language		Yes
			Clock Set		No
			On/Off Timer Set		No
			Pin Code Registration		No
			Nicam Auto Off		No
			Colour System		No
			Sound System		No
			AV2 Output		Yes
				Output Source	Yes
				Source	Yes
			Control Level		Yes
				Volume	Yes
				Brightness	Yes
				Contrast	Yes
				Colour	Yes
				Tint (NTSC Only)	No
				Sharpness	Yes
				Tuning	Yes
				Bass	Yes

GENERAL SPECIFICATIONS

			Treble	Yes
			Balance	Yes
			Back Light	No
		Nicam ST		No
		Stereo		Yes
		Tone 1/2		Yes
		Pin Code		No
		AV		Yes
		Skip		Yes
		Channel		Yes
		Hotel Lock		No
		Sleep Timer		Yes
		Sound Mute		Yes
G-8	OSD Language			English French Spanish German Italian
G-9	Clock and Timer	Sleep Timer	Max Time	120 Min
			Step	10 Min
		On/Off Timer	Program(On Timer / Off Timer)	No
		Wake Up Timer		No
		Timer Back-up (at Power Off Mode)	more than	-- Min Sec
G-10	Remote Control	Unit		RC-GE
		Glow in Dark Remocon		No
		Format		NEC
		Custom Code		80-63 h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		31 Keys
		Keys	Power (Stand By)	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0 / AV	Yes
			CH Up	No
			CH Down	No
			Volume Up / +	Yes
			Volume Down / -	Yes
			Quick View	No
			Sleep	Yes
			Info (CH Call)	Yes
			Normal	No
			Menu	Yes
			Enter	Yes
			Mute	Yes
			Fine Tuning +	No
			Fine Tuning -	No
			Tone 1/2	No
		T'TEXT Keys	TEXT / MIX / TV	Yes
			CH Up / Page Up	Yes
			CH Down / Page Down	Yes
			Red	Yes
			Green	Yes
			Yellow / Fine Tuning -	Yes
			Cyan / Fine Tuning +	Yes
			F/T/B(Expand) / Normal	Yes
			Reveal / Skip	Yes
			Display Cancel	Yes
			Reset	No
			Reset / Tone 1/2	Yes
			Hold / Status	Yes
			Sub Page / Quick View	Yes
G-11	Features	Auto Degauss		Yes
		Auto Shut Off		Yes
		Canal+		No
		CATV		No
		Anti-theft		No
		Memory(Last CH)		Yes
		Memory(Last Volume)		Yes
		BBE		No
		Auto Search		Yes
		CH Allocation		Yes
		Channel Lock		No

GENERAL SPECIFICATIONS

		Just Clock Function			No
		Game Position			No
		CH Label			No
		VM Circuit			No
		Full OSD			No
		Unitext			No
		Fastext			No
		Top Text			Yes
		Premiere			No
		Comb Filter			No Lines
		Auto CH Memory			Yes
		Stable Sound			No
		Auto Set Up			No
		FBT Leak Test Protect			No
		Power ON Memory			Yes
		Hotel Lock			No
G-12	Accessories	Owner's Manual		Language	German
				w/Guarantee Card	Yes
		Remote Control Unit			Yes
		Rod Antenna			No
				Poles	Pole
				Terminal	type
		Loop Antenna			No
				Terminal	-
		U/V Mixer			No
		DC Car Cord (Center+)			No
		Guarantee Card			No
		Warning Sheet			No
		Circuit Diagram			No
		Antenna Change Plug			No
		Service Facility List			No
		Important Safeguard			No
		Dew/AHC Caution Sheet			No
		AC Plug Adapter			No
		Quick Set-up Sheet			No
		Battery			Yes
				UM size x pcs	UM-4 x 2 pcs
				OEM Brand	No
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Registration Card			No
		PTB Sheet			No
		300 ohm to 75 ohm Antenna Adapter			No
G-13	Interface	Switch	Front	Power (Tact Sw)	No
				System Select	No
				Main Power SW	Yes
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	No
				Stand-by	Yes
				On Timer	No
		Terminals	Front	Video Input	RCA
				Audio Input	RCA x 2
				Other Terminal	Headphone
			Rear	Video Input(Rear1)	No
				Video Input(Rear2)	No
				Audio Input(Rear1)	No
				Audio Input(Rear2)	No
				Video Output	No
				Audio Output	No
				Euro Scart(21Pin)	Yes (x1)
				S-INPUT	Yes (x1)
				Euro Scart(21Pin)	Yes (x1)
				RGB-INPUT	Yes (x1)
				Component Input	No
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	D Type

GENERAL SPECIFICATIONS

			AC Outlet	No
G-14	Set Size		Approx. W x D x H (mm)	711.0 x 485.0 x 546.5
G-15	Weight		Net (Approx.)	30.0kg (--- lbs)
			Gross (Approx.)	33.0Kg (---lbs)
G-16	Carton	Master Carton		No
			Content	---- Sets
			Material	-- /--
			Dimensions W x D x H(mm)	-- x -- x --
			Description of Origin	No
		Gift Box		Yes
			Material	Double/White
			Dimensions W x D x H(mm)	779 x 565 x 641
			Design	As per Buyer's
			Description of Origin	No
		Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
			Height (cm)	31
		Container Stuffing		180 Sets/40' container
G-17	Cabinet Material		Cabinet Front	PS 94HB
			Cabinet Rear	PS 94HB
			Cover	PS 94V0 NON-DECABROM
		PCB	Non-Halogen Demand	No
			Eyelet Demand	No
G-18	Environment	Pb Free	Lead-free Solder	No
			Other	No
		Cd Free		No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

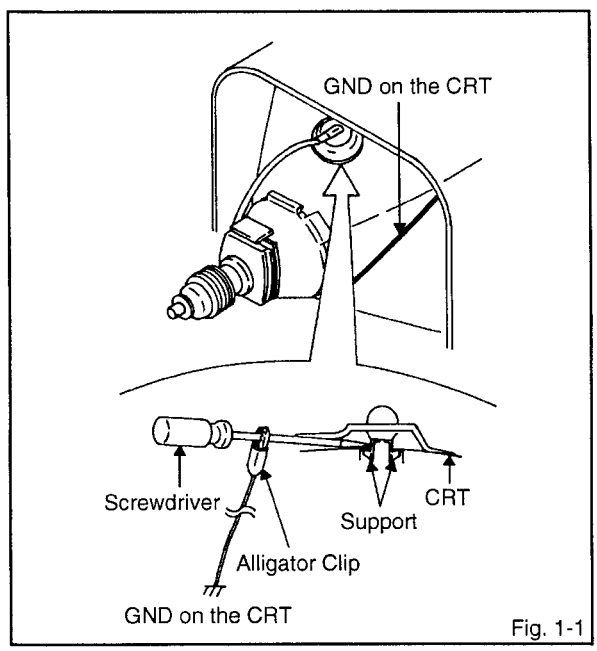


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

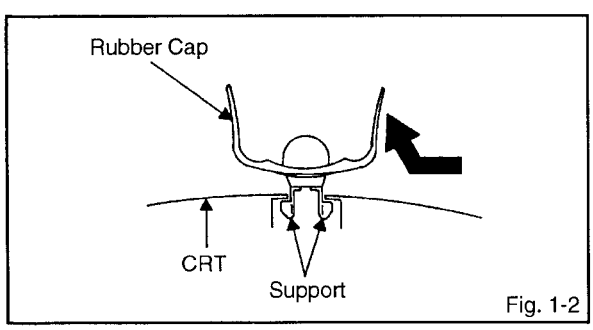


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

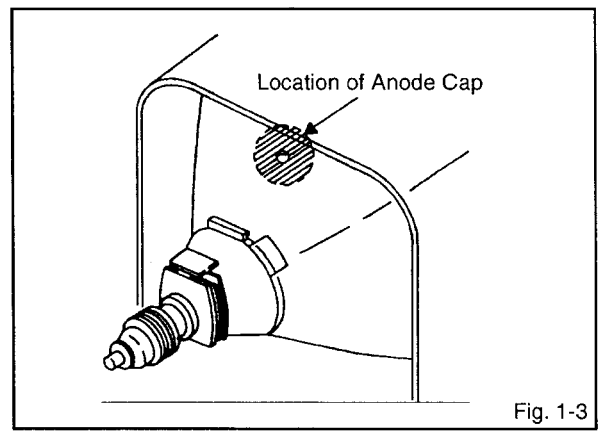


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

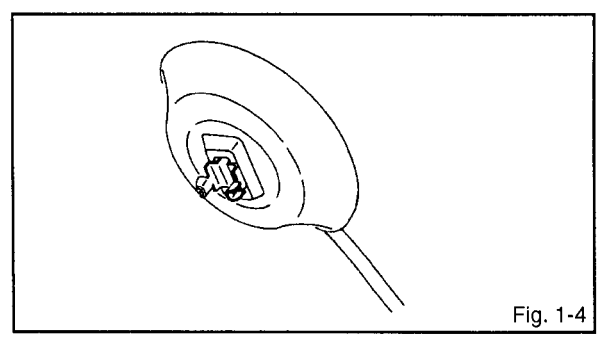


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 1-5**.

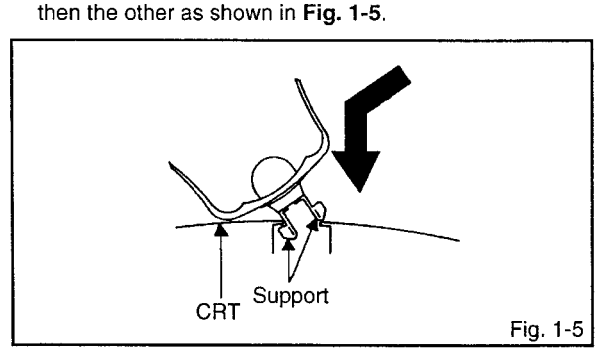


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

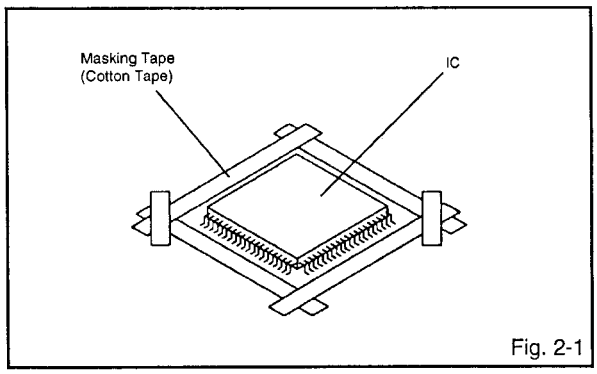


Fig. 2-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

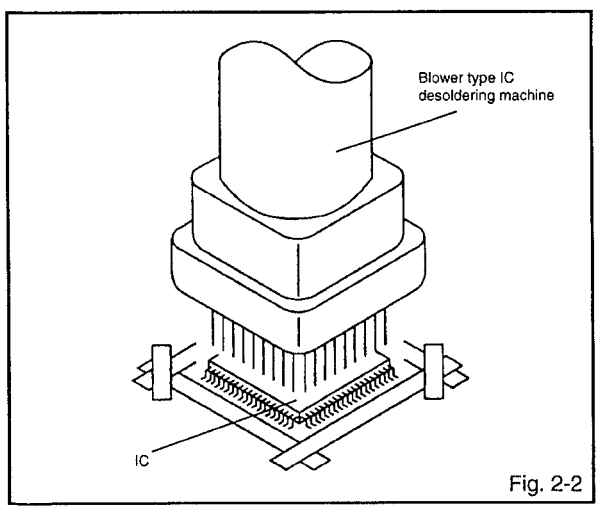


Fig. 2-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

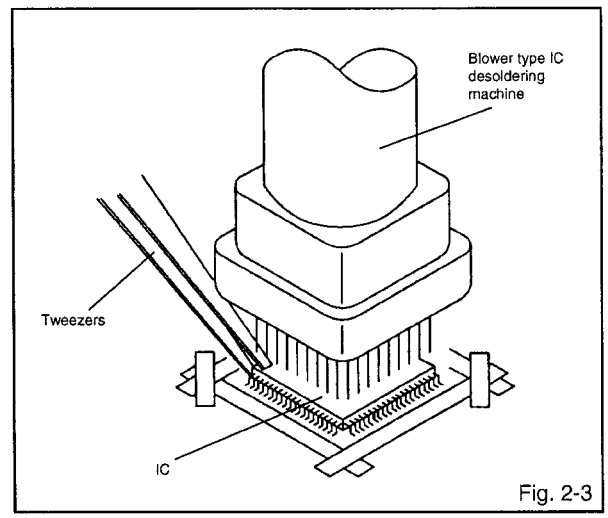


Fig. 2-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

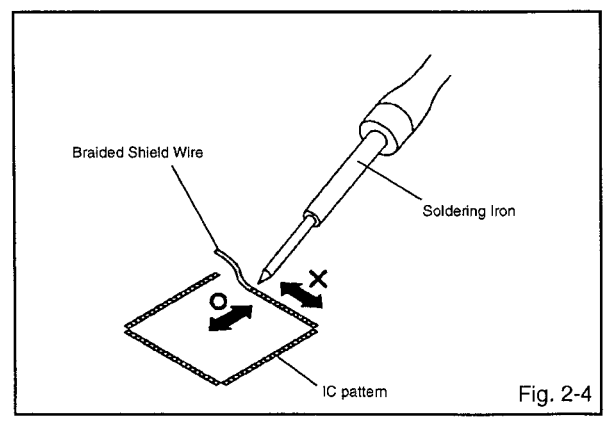


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**

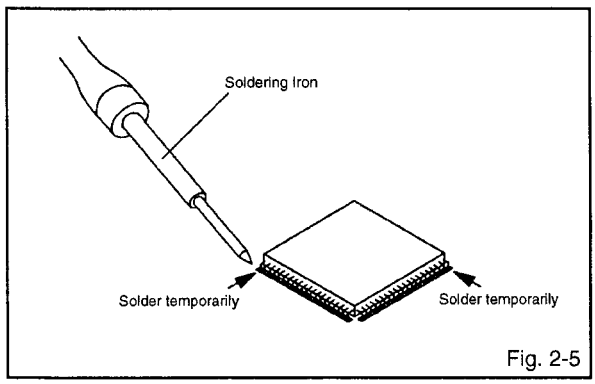


Fig. 2-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**

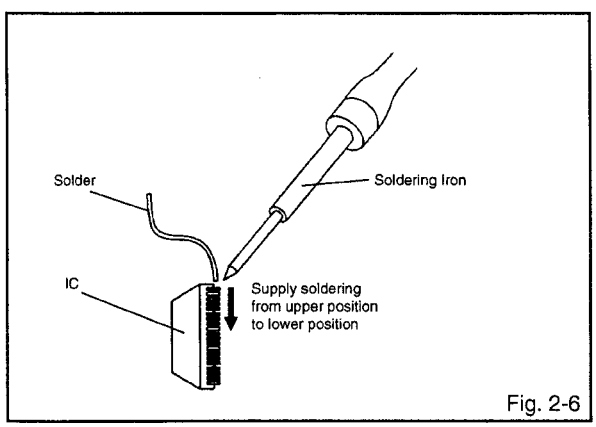


Fig. 2-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

NOTE

Do not absorb the solder to excess.

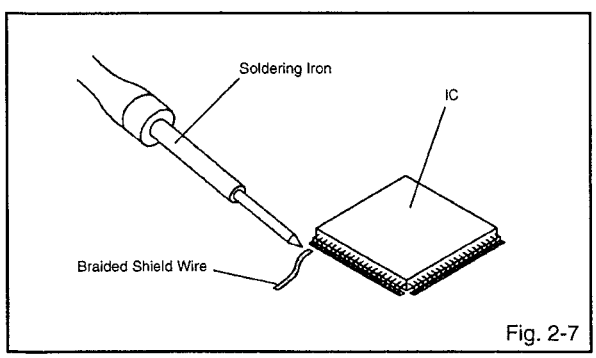


Fig. 2-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**

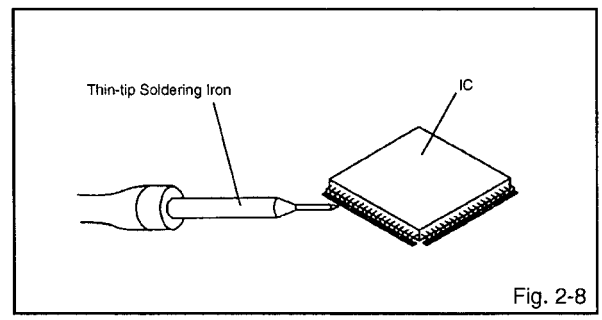


Fig. 2-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 2 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Reset the user setting items (PICTURE, VOLUME, LANGUAGE) to the initial state for delivery.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, the POWER ON total hours
VOL. (-) MIN	6	POWER ON total hours is displayed on the screen. Refer to the "CONFIRMATION OF HOURS USED". Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control.
3. After the confirmation of using hours, turn off the power.

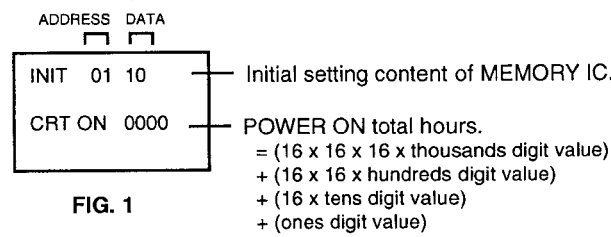

ADDRESS
DATA
INIT 01 10
CRT ON 0000
Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	--	10	38	29	24	30	80	41	01	45	00	01	03	00	06	72
10	20	00	80	80	80	04	00									

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds.

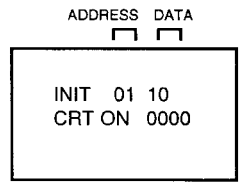


Fig. 1

3. ADDRESS is now selected and should "blink". Using the VOL. +/- button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. +/- button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. While holding down VOLUME button on front cabinet, press key 1 on remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease **(YG6260M)** on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1.**

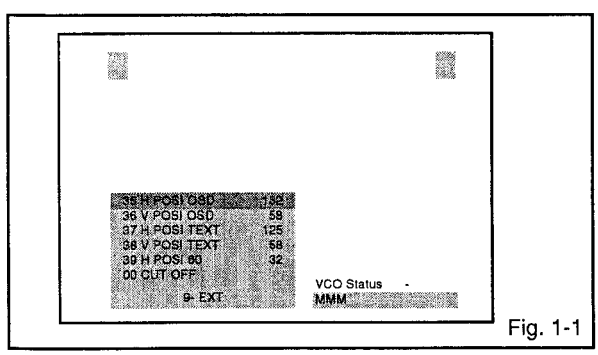


Fig. 1-1

2. Use the Channel UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2.**
3. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	CUT OFF	25	COLOR CENT
01	RF AGC	26	COLOR MAX
02	AGC GAIN	27	COLOR MIN
03	R DRIVE	28	M R CUT OFF
04	R CUT OFF	29	M G CUT OFF
05	G DRIVE	30	M B CUT OFF
06	G CUT OFF	31	CVBS OUT
07	B DRIVE	32	APR THR
08	H POSI 50	33	BELL FILTER
09	V POSI 50	34	BANDPASS
10	V POSI 60	35	H POSI OSD
11	V SIZE 50	36	V POSI OSD
12	V SIZE 60	37	H POSI TXT
13	VCO COASE	38	V POSI TXT
14	VCO FINE	39	H POSI 60
15	VCO COARSE L1	40	V POSI 50
16	VCO LINE L1	41	V POSI 60
17	BRIGHT CENT	42	V SIZE 50
18	BRIGHT MAX	43	V SIZE 60
19	BRIGHT MIN	44	SCORR
21	SHARP	45	C CORR
22	CONT CENT	46	H SIZE
23	CONT MAX	47	PIN CUSH
24	CONT MIN	48	E/W SHAPE
		49	TRAPEZ

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: AGC VOLTAGE

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the VHF (HIGHT) (63±1dB).
3. Connect the digital voltmeter between the **pin 5** and **pin 1 (GND) of CP101.**
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RF AGC".
5. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.40 ± 0.05V.

2-2: CUT OFF

1. Place the set with Aging Test for more than 15 minutes.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "CUT OFF".
3. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "R DRIVE".
5. Press the Channel UP/DOWN button on the remote control to select the "R DRIVE", "G DRIVE", "M R CUTOFF" or "M G CUTOFF".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R DRIVE, G DRIVE, M R CUT OFF, and M G CUT OFF at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

ELECTRICAL ADJUSTMENTS

2-4: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-5: CONSTANT VOLTAGE

1. Place the set with Aging Test for more than 5 minutes.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP501.**
4. Set condition is AV MODE without signal.
5. Adjust the **VR501** until the digital voltmeter is 135 ± 0.5V.

2-6: HORIZONTAL POSITION

1. Receive the monoscope pattern. (RF Input)
2. Place the set with Aging Test for more than 15 minutes.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "H POSI(50)".
5. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.
6. Receive the monoscope pattern of NTSC. (Audio Video Input)
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(39)** on the remote control to select "H POSI(60)".
9. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-7: VERTICAL POSITION, VERTICAL LINEALITY

1. Receive the monoscope pattern. (RF Input)
2. Place the set with Aging Test for more than 15 minutes.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(40)** on the remote control to select "V POSI(50)".
5. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(45)** on the remote control to select "C CORRP".
7. Press the VOL. UP/DOWN button on the remote control until the position of CRT CENTER line of screen and CRT CENTER marker to same.
8. Receive the monoscope pattern of NTSC. (Audio Video Input)
9. Using the remote control, set the brightness and contrast to normal position.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(41)** on the remote control to select "V POSI(60)".
11. Press the VOL. UP/DOWN button on the remote control until the Shift quantity of the OVER SCAN on right and left becomes minimum.

2-8: VERTICAL SIZE

1. Receive the monoscope pattern. (RF Input)
2. Place the set with Aging Test for more than 15 minutes.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(42)** on the remote control to select "V SIZE(50)".
5. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 8 ± 2%.
6. Receive the monoscope pattern of NTSC. Using the remote control, set the brightness and contrast to normal position.
7. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(43)** on the remote control to select "V SIZE(60)".
8. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 10 ± 2%.

2-9: BRIGHT CENT

1. Receive the black pattern*. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
5. Press the VOL. UP/DOWN button on the remote control until the screen begin to shine.
6. Receive the black pattern*. (Audio Video Input)
7. Set to the AV mode. Then perform the above adjustments 2~5.

*The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-10: CONTRAST CENT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "CONT CENT".
4. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "44".
5. Receive a broadcast and check if the picture is normal.
6. Receive the color bar pattern. (Audio Video)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.

ELECTRICAL ADJUSTMENTS

2-11: COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Place the set with Aging Test for more than 15 minutes.
3. Connect the oscilloscope to **TP801.**
4. Using the remote control, set the brightness, contrast and color to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(25)** on the remote control to select "COLOR CENT".
6. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 5 scales on the screen of the oscilloscope.
7. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 90 ± 10% for the white level. **(Refer to Fig. 2-1)**
8. Receive the color bar pattern. (Audio Video Input)
9. Set to the AV mode. Then perform the above adjustments 2~6.

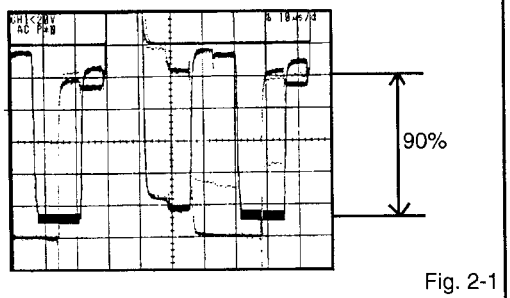


Fig. 2-1

2-12: VCO COARSE/VCO FINE

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (38.9MHz) to **TP001.**
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "VCO COARSE".
4. Press the VOL. UP/DOWN button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "-" side on the changed from "+" to "-".
5. Press the CH UP button once to set to "VCO FINE" mode.
6. Press the VOL. UP/DOWN button on the remote control to select the 5 step down point from the upper limit on the "OK".
   (Example: In case of the "OK" point 30~41, select 37.)

2-13: PIN CUSH/TRAPEZ

1. Receive the crosshatch signal from the Pattern Generator.
2. Place the set with Aging Test for more than 15 minutes.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(49)** on the remote control to select "TRAPEZ".
5. Press the VOL. UP/DOWN button on the remote control until the both vertical lines of the screen become parallel.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(47)** on the remote control to select "PIN CUSH".
7. Press the VOL. UP/DOWN button on the remote control until the right and left vertical lines are straight.

2-14: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	RF	AV
02	AGC GAIN	00	---
04	R CUTOFF	00	---
06	G CUTOFF	00	---
07	B DRIVE	45	---
18	BRIGHT MAX	60	60
19	BRIGHT MIN	15	15
21	SHARP	03	03
23	CONT MAX	63	63
24	CONT MIN	05	05
26	COLOR MAX	50	50
27	COLOR MIN	10	10
30	M B CUTOFF	127	---
31	CVBS OUT	31	---
32	APR THR	00	---
33	BELL FILTER	00	---
34	BANDPASS	00	00
35	H POSI OSD	132	---
36	V POSI OSD	58	---
37	H POSI TXT	125	---
38	V POSI TXT	58	---
44	SCORR	04	---
48	E/W SHAPE	00	---

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

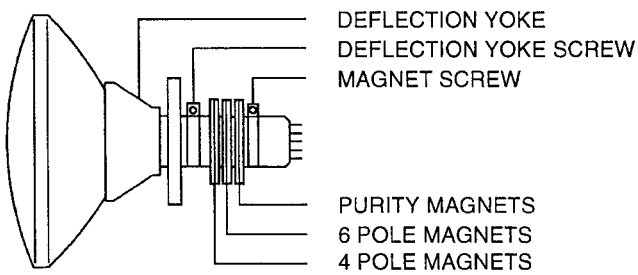


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

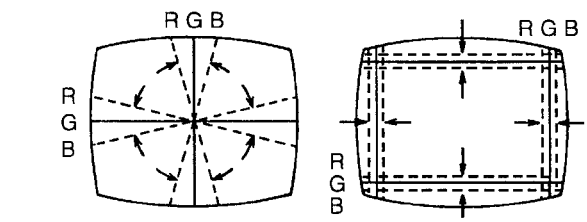
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

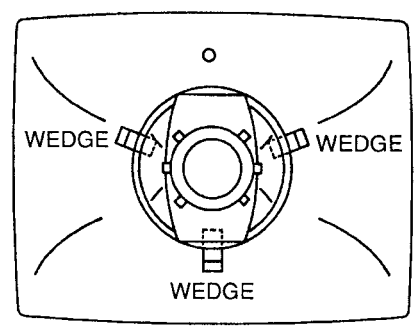
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

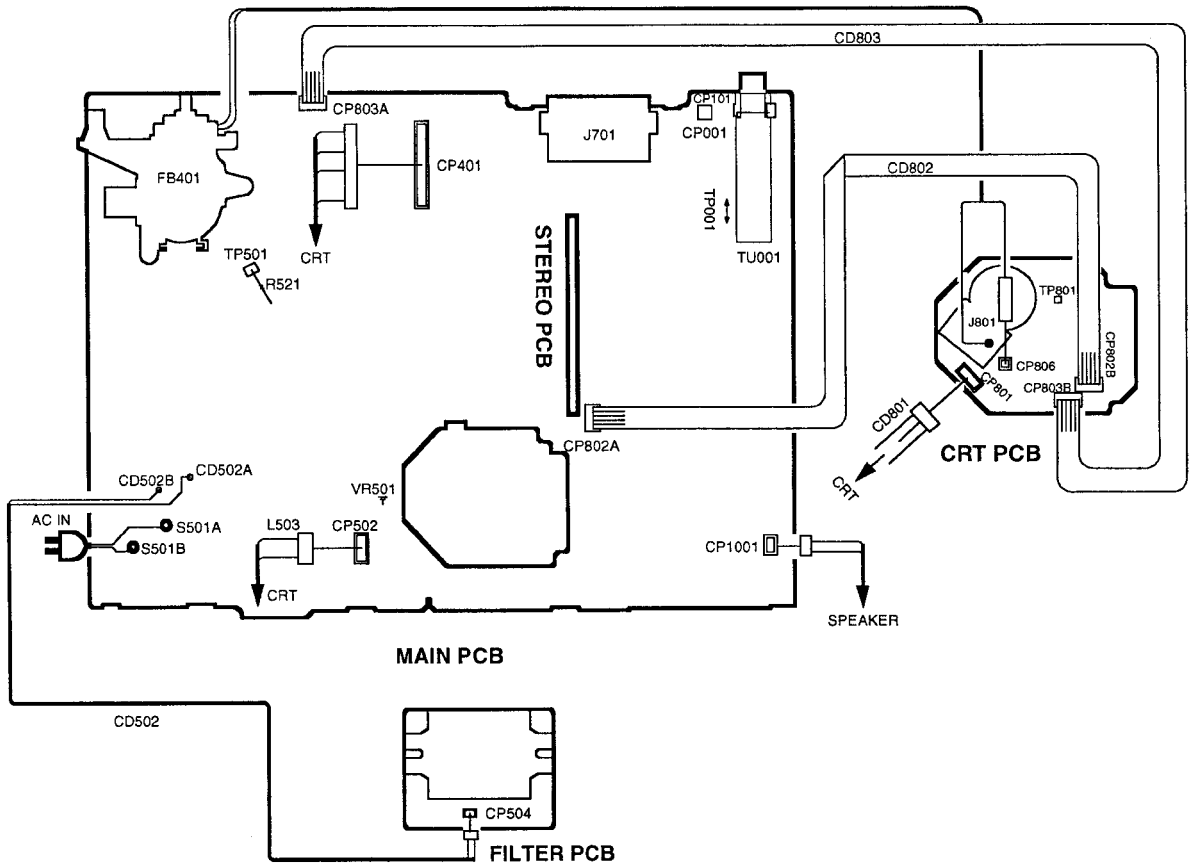


WEDGE POSITION

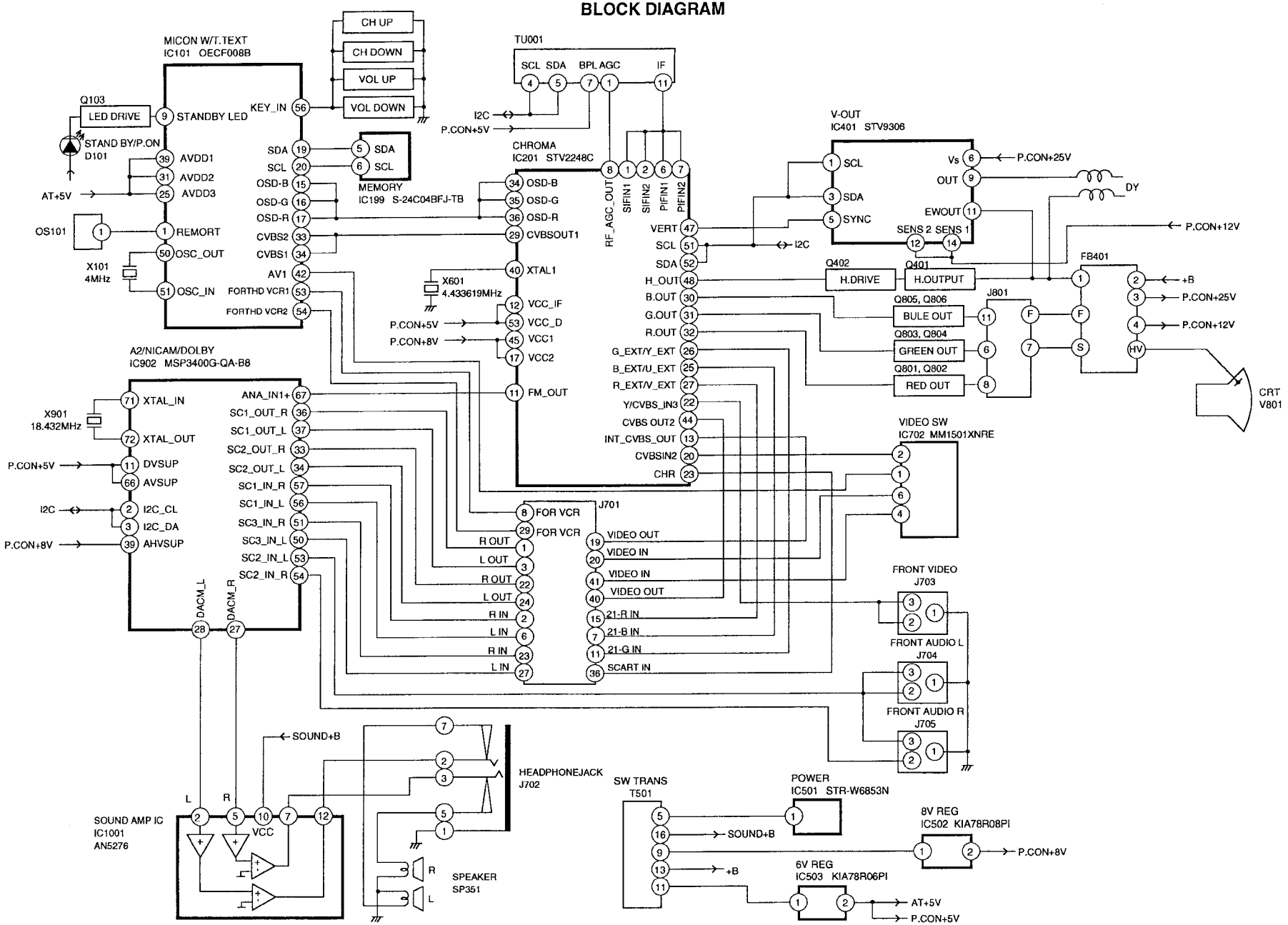
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

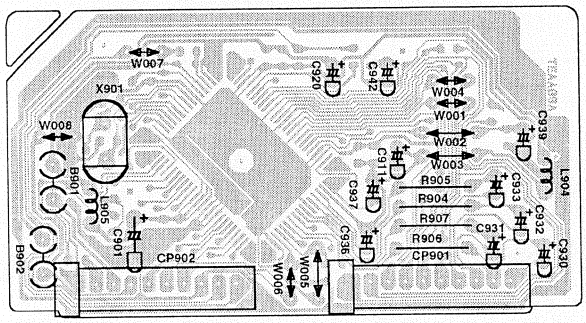


BLOCK DIAGRAM

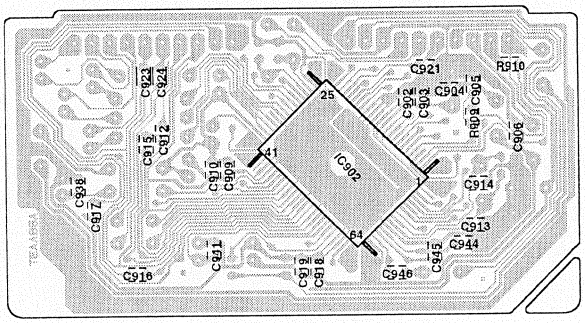


PRINTED CIRCUIT BOARDS

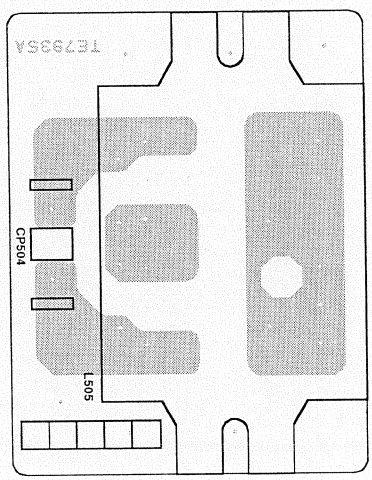
STEREO (INSERTED PARTS)
SOLDER SIDE



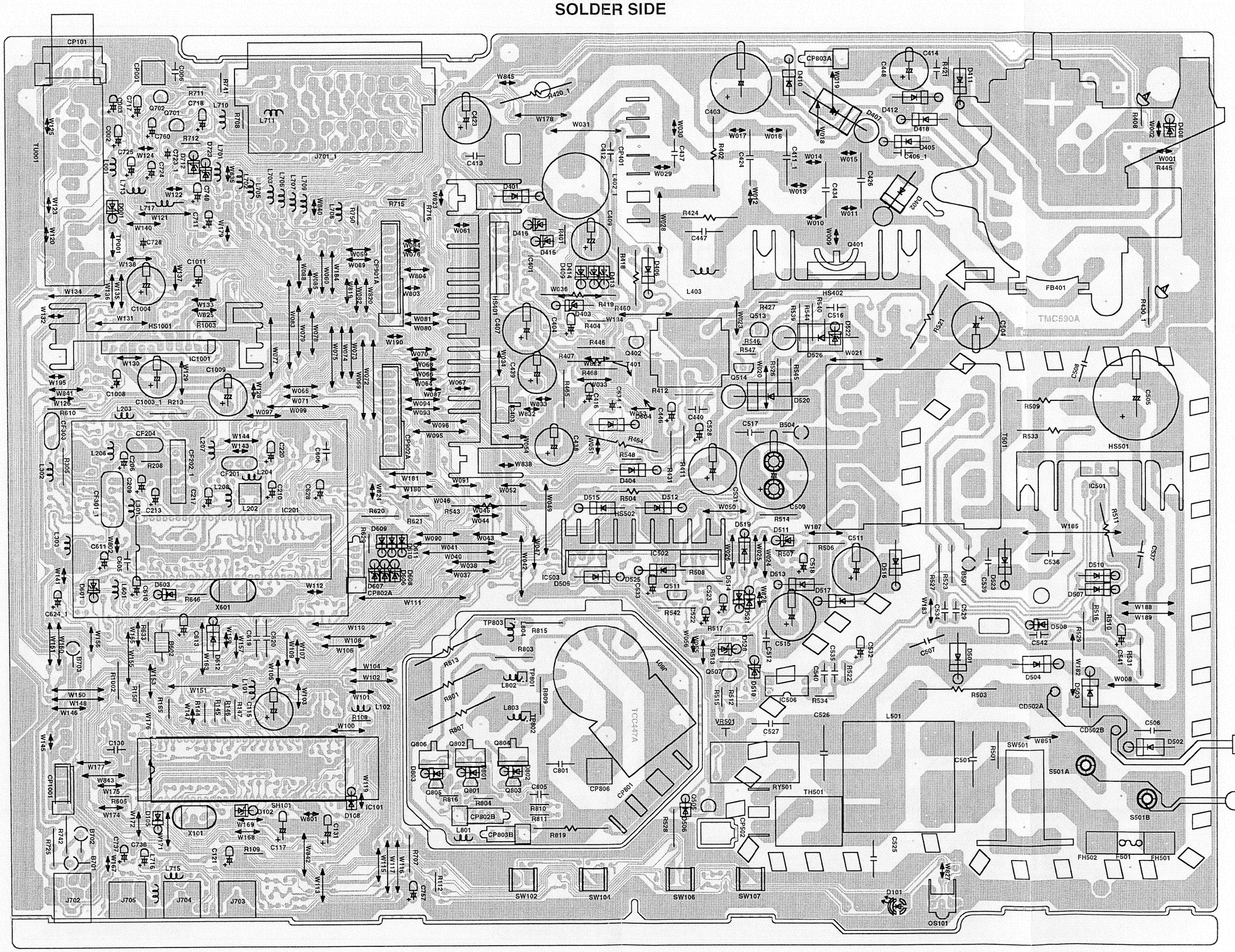
STEREO (CHIP MOUNTED PARTS)
SOLDER SIDE



FILTER
SOLDER SIDE



PRINTED CIRCUIT BOARDS
MAIN/CRT (INSERTED PARTS)
SOLDER SIDE


CP101
T1001
W135
W123
W120
C2001
C006
R741
R711
C718
L710
L711
R708
Q702
Q701
C717
C760
C2002
R712
C725
W124
C724
C723_1
D712
D723
L701
L001
L715
D001
W122
L717
W121
W140
C728
C711
C749
W179
W138
C1011
C1004
W134
W135
W136
W132
W131
HS1001
W133
W821
R1003
TP001
J701_1
W845
R420_1
W178
W031
C423
C413
C412
CP401
L402_1
C409
W030
C437
W029
D401
D416
D415
R407
R418
D406
D414
D409
D413
W036
D403
R419
R460
W134
R404
R445
Q402
T401
R407
W822
R468
W033
C316
C403
W017
W016
C424
C411_1
W014
W015
C434
C426
W013
W012
W010
W011
W009
Q401
R424
C447
L403
W028
W061
W804
W803
W081
W080
W190
W070
W068
W066
W064
W067
W087
W094
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W151
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W158
W159
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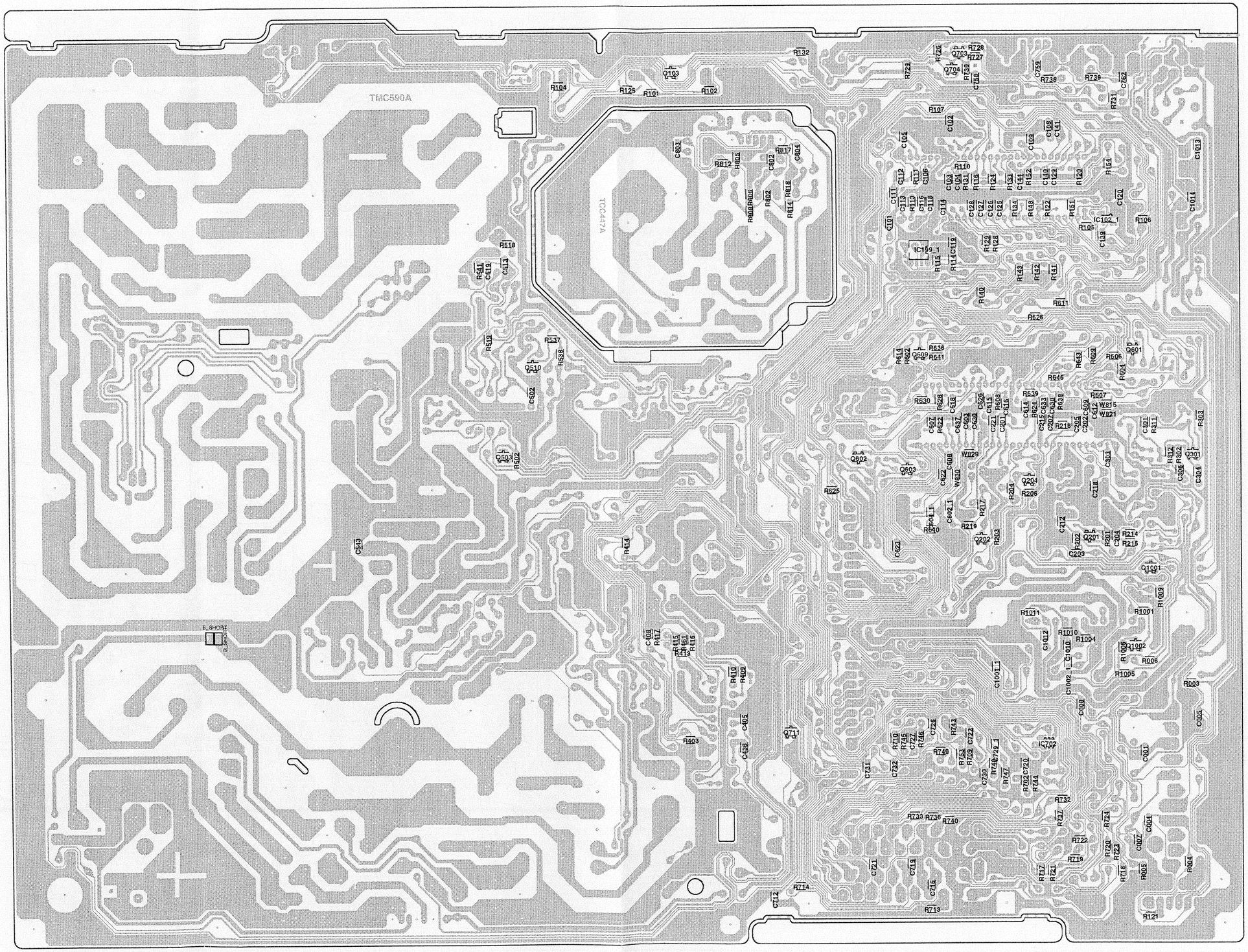
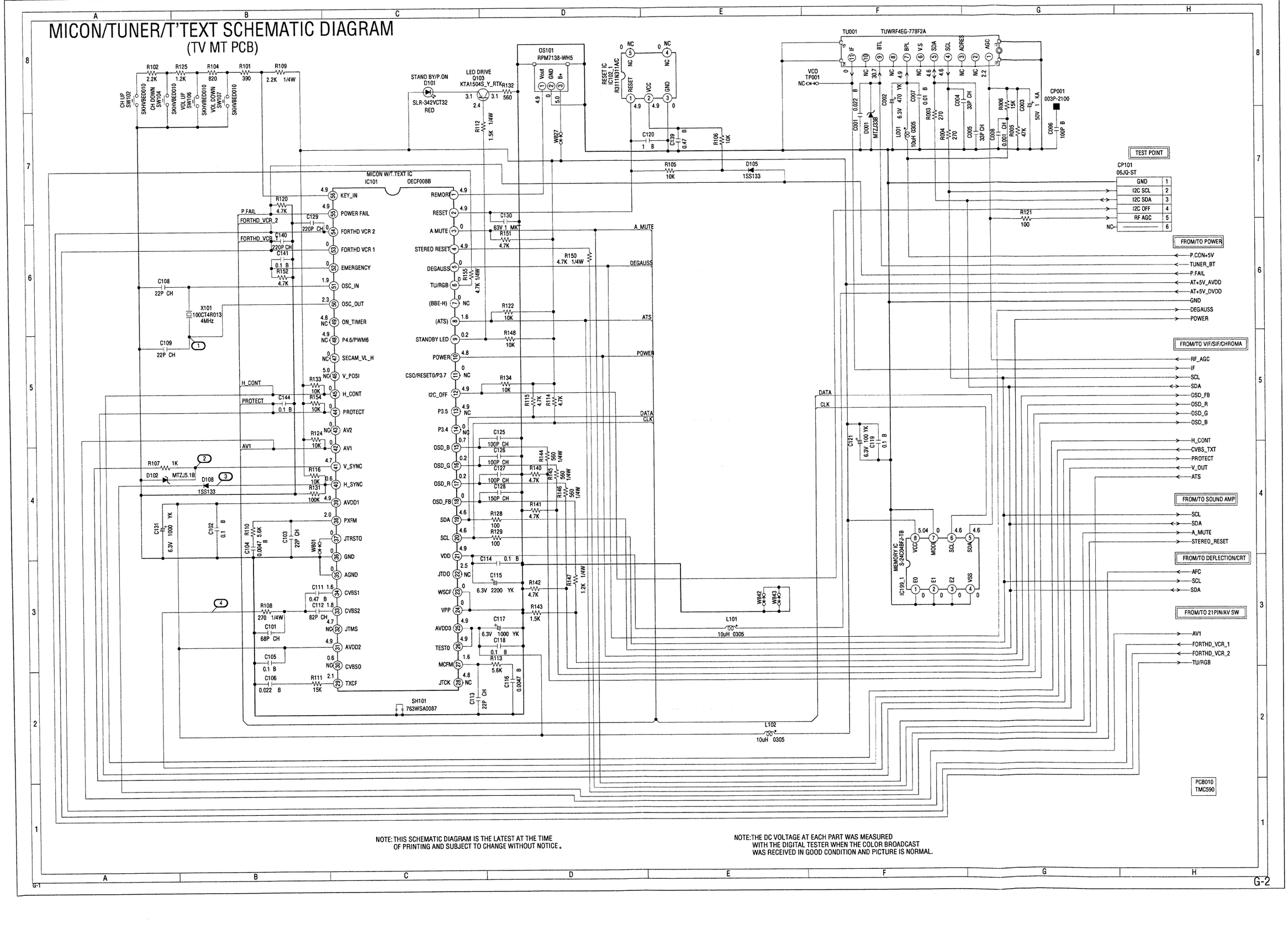
W162
W163
W154
W150
W148
W146
W145
W141
W112
W802
C611
C605
L601
D601
D603
C610
R646
X601
C624_1
B703
R1002
R1005
R1006
C613
C618
C620
D612
L101
C115
R144
R145
R146
R147
R148
C130
W177
W843
W175
W174
CP1001
R606
R742
B702
C737
W167
R725
B701
C736
L716
L715
D105
W171
X101
W172
W169
W168
D102
SH101
C121
R109
C117
W842
W113
W115
W116
W117
C757
R707
R112
J702
J705
J704
J703
W801
C131
D108
IC101
W119
W177
C1009
C1008
C1003_1
R213
W130
IC1001
W129
W128
W195
W841
W126
R610
L203
CF204
L206
R208
CF202_1
L207
C206
C209
L301
C213
CF201
L204
C210
L208
L202
C220
C606
C628
IC201
CF303
L302
R305
CF301_1
L303
W144
W143
C217
W824
R620
R621
D609
R610
D611
D510
D508
D607
CP802A
D606
W090
W041
W040
W038
W037
W042
W049
W111
W112

PRINTED CIRCUIT BOARDS
MAIN/CRT (CHIP MOUNTED PARTS)
SOLDER SIDE



MICON/TUNER/T'TEXT SCHEMATIC DIAGRAM
(TV MT PCB)

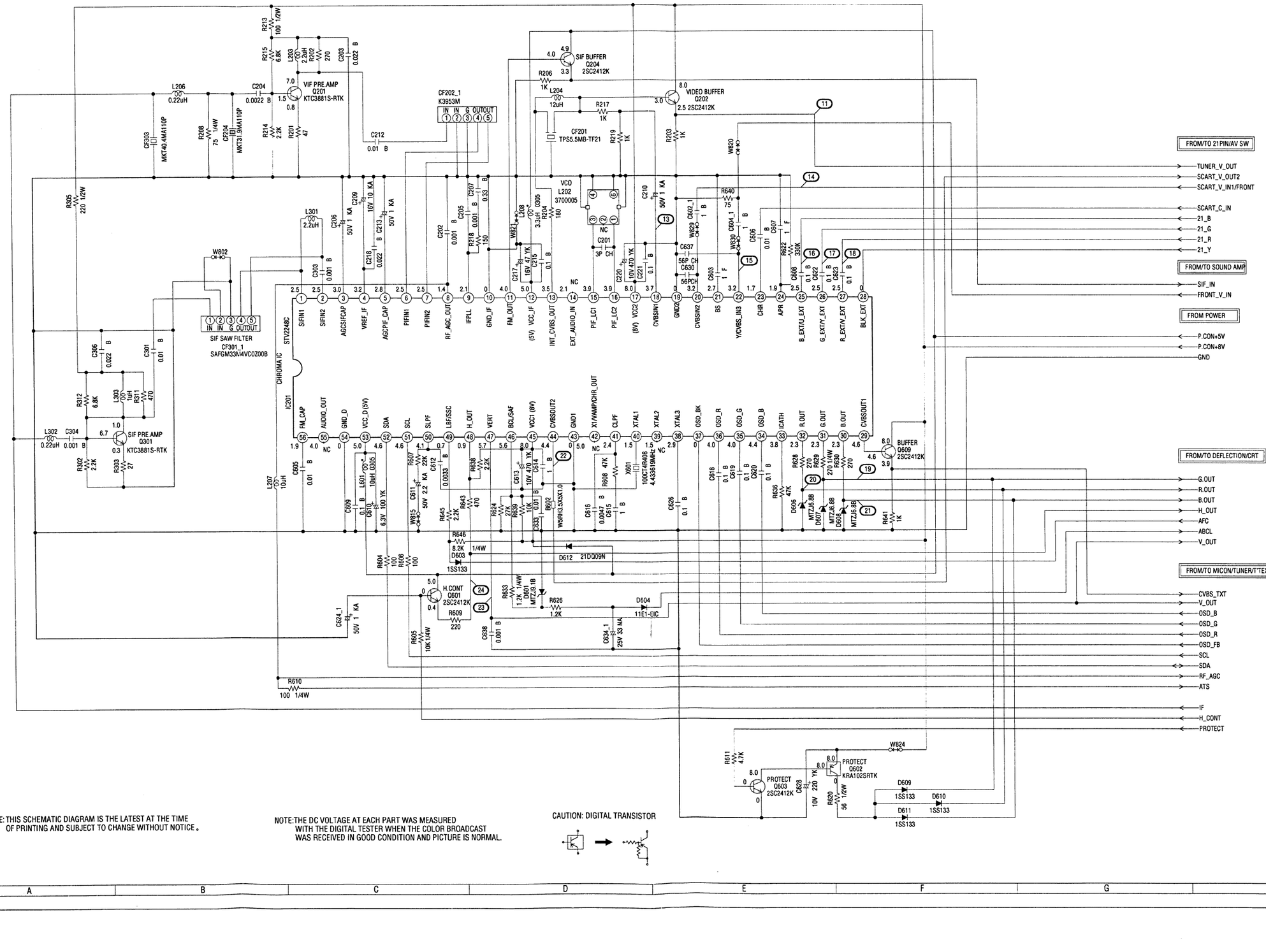


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

VIF/SIF/CHROMA SCHEMATIC DIAGRAM

(TV MT PCB)



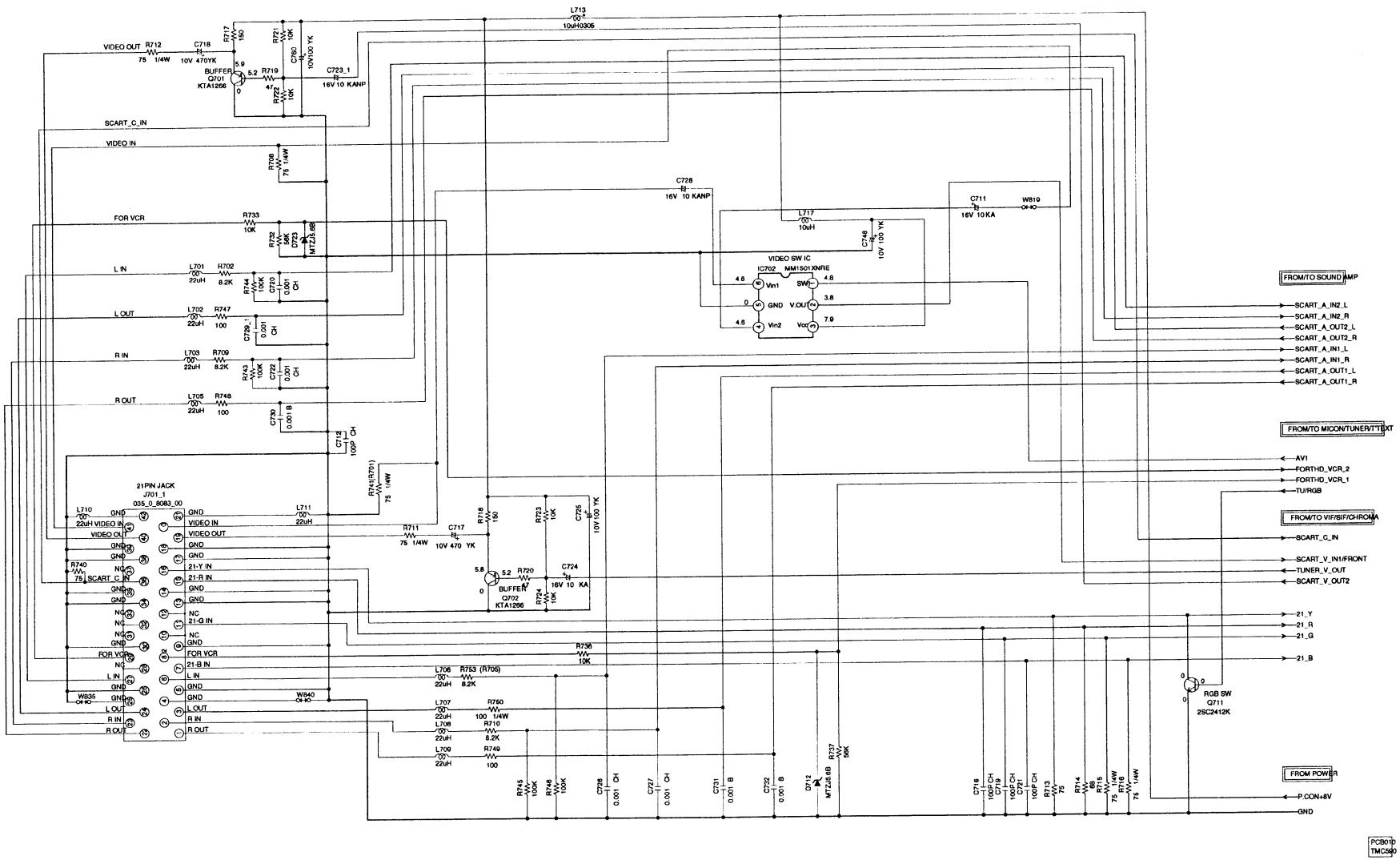
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

CAUTION: DIGITAL TRANSISTOR

21PIN/AV SW SCHEMATIC DIAGRAM

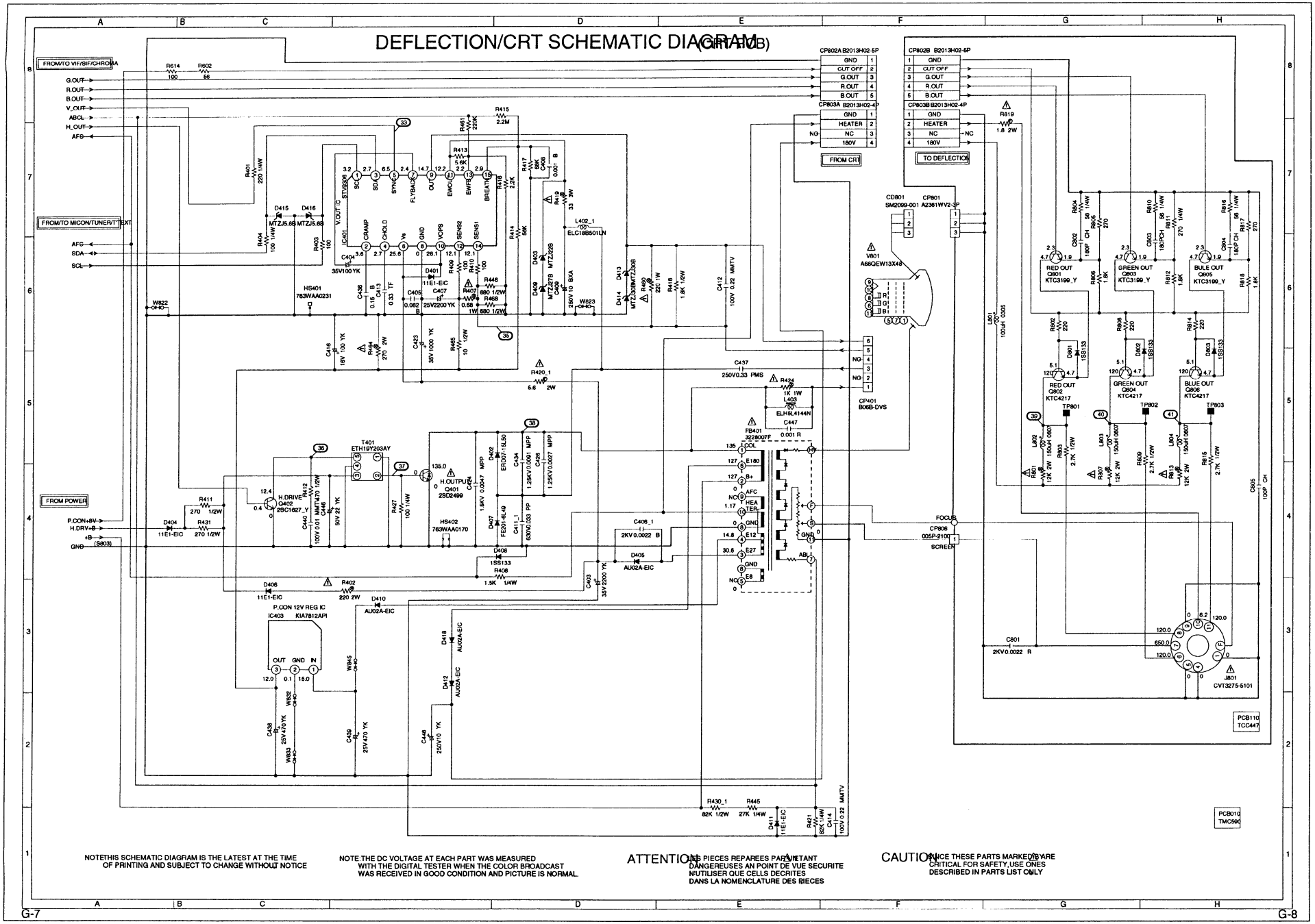
(TV MT PCB)



NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL

DEFLECTION/CRT SCHEMATIC DIAGRAM (CRT-A/B)


FROM/TO VIF/SIF/CHROMA
G.OUT
R.OUT
B.OUT
V_OUT
ABCL
H_OUT
AFC
FROM/TO MICON/TUNER/T
EXT
AFC
SDA
SCL
FROM POWER
P.CON+8V
H.DRV+B
+B
GND
(S803)
CP802A B2013H02-5P
GND
CUT OFF
G.OUT
R.OUT
B.OUT
CP803A B2013H02-4P
GND
HEATER
NC
180V
FROM CRT
CP802B B2013H02-5P
CP803B B2013H02-4P
TO DEFLECTION
CD801 SM2099-001
CP801 A2361WV2-3P
V801 A66QEW13X48
CP401 B06B-DVS
CP806 005P-2100
SCREEN
FOCUS
RED OUT Q801 KTC3199_Y
GREEN OUT Q803 KTC3199_Y
BULE OUT Q805 KTC3199_Y
RED OUT Q802 KTC4217
GREEN OUT Q804 KTC4217
BLUE OUT Q806 KTC4217
TP801
TP802
TP803
J801 CVT3275-5101
PCB110 TCC447
PCB010 TMC590
IC401 STV9306
IC403 KIA7812API
T401 ETH19Y203AY
H.DRIVE Q402 2SC1627_Y
H.OUTPUT Q401 2SD2499
HS401 783WAA0231
HS402 783WAA0170
FB401 3228007E
L402_1 ELC18B501LN
CP404 36V100 YK
C405 C407 25V2200 YK
C437 250V0.33 PMS
C447 0.001 R
C801 2KV0.0022 R
C406_1 2KV0.0022 B
C403 35V2200 YK
C438 C439 25V470 YK
C448 250V10 YK
C412 100V 0.22 MMTV
C414 100V 0.22 MMTV
L801 100UH 0305
L802 L803 L804 150uH 0607
C805 100P CH
D401 11E1-EIC
D404 11E1-EIC
D405 AU02A-EIC
D406 11E1-EIC
D408 1SS133
D410 AU02A-EIC
D411 11E1-EIC
D412 AU02A-EIC
D418 AU02A-EIC
D801 D802 D803 1SS133
D402 ER0071SL50
D407 FE201-6L40
D413 MTZJ30BM
D414 MTZJ33BM
D415 D416 MTZJ5.6B
D403 MTZJ22B
D409 MTZJ27B
R819 1.8 2W
R420_1 6.6 2W
R424 1K 1W
L403 ELHSL4144N
R402 220 2W
R408 1.5K 1/4W
R430_1 82K 1/2W
R445 27K 1/4W
R421 82K 1/4W
R446 680 1/2W
R447 680 1/2W
R448 1W 680 1/2W
R449 33 3W
R415 2.2M
R413 5.6K
R461 220K
R414 56K
R417 1K
R418 2.2K
R401 220 1/4W
R404 100 1/4W
R403 100
R409 100
R410 100
R411 270 1/2W
R431 270 1/2W
R412 470 1/2W
R427 100 1/4W
R464 270 2W
R465 10 1/2W
W822
W823
W824
W825
W832
W833
W834
W835
W836
W837
W838
W839
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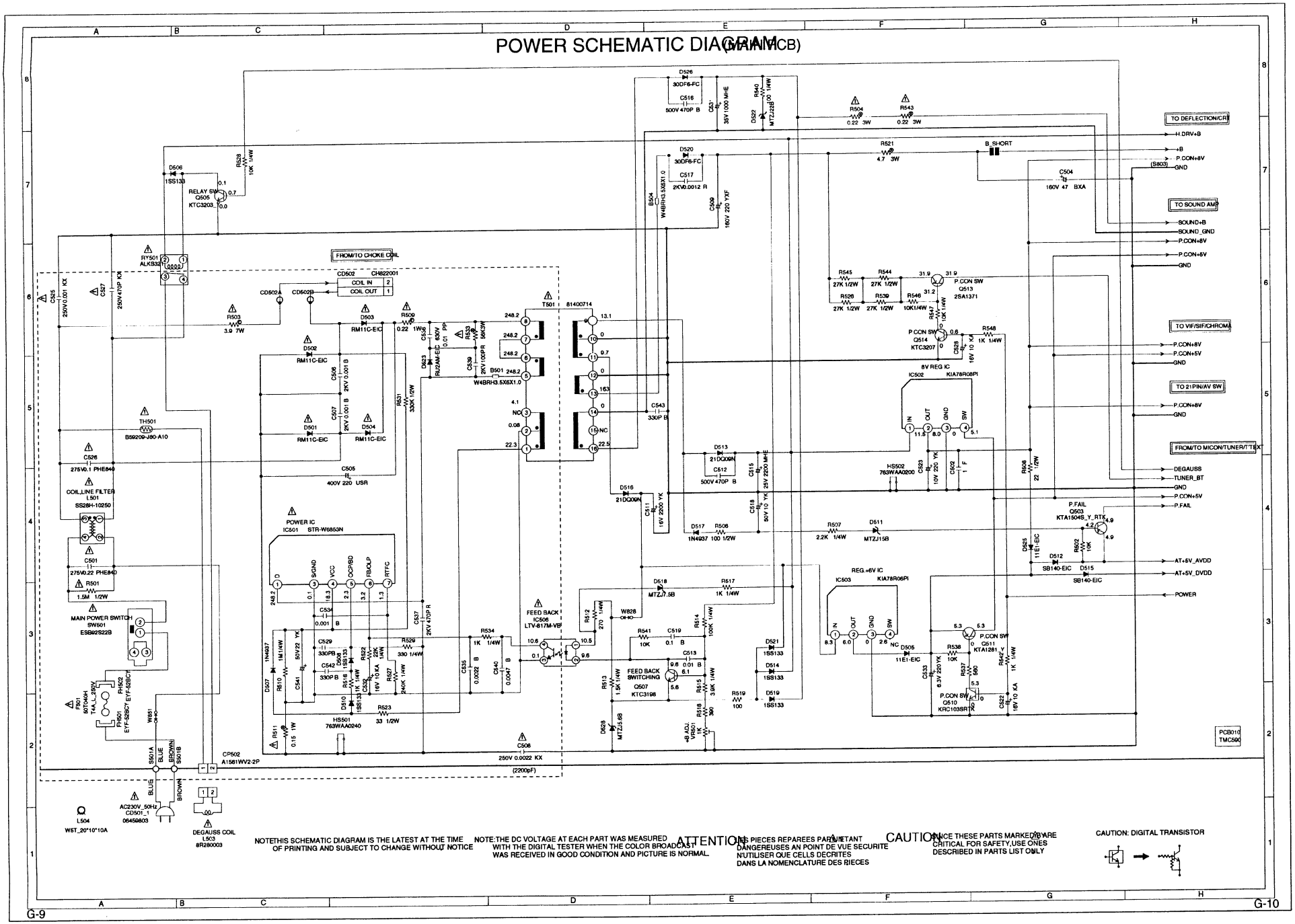
W862
W863
W864
W865
W866
W867
W868
W869
W870
W871

POWER SCHEMATIC DIAGRAM (MAIN PCB)



NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

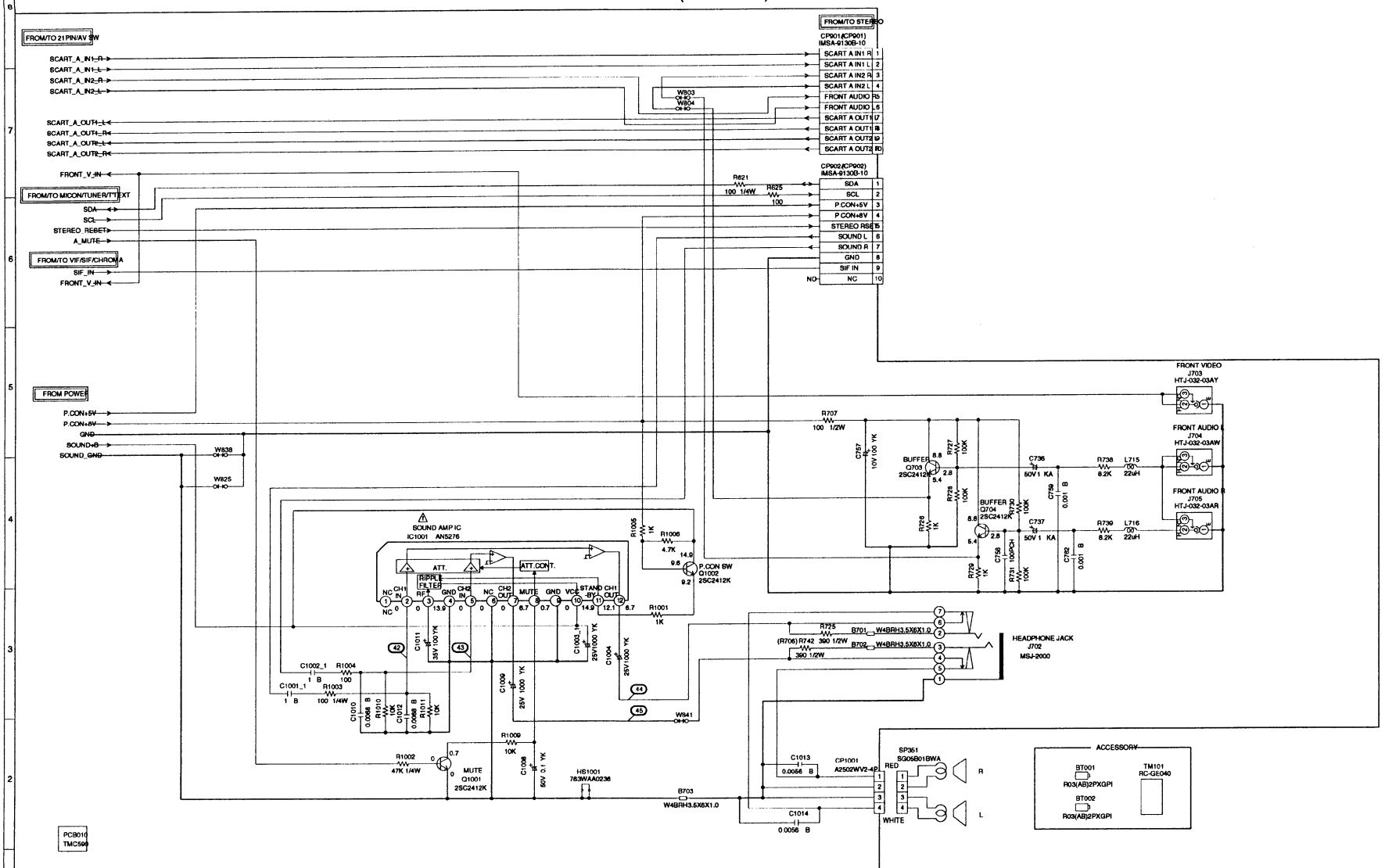
ATTENTION: CES PIECES REPAREES PARTICULIEREMENT IMPORTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES RIECES

CAUTION: FOR SAFETY, ONCE THESE PARTS MARKED Δ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

CAUTION: DIGITAL TRANSISTOR

SOUND AMP SCHEMATIC DIAGRAM

(MAIN PCB)



NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

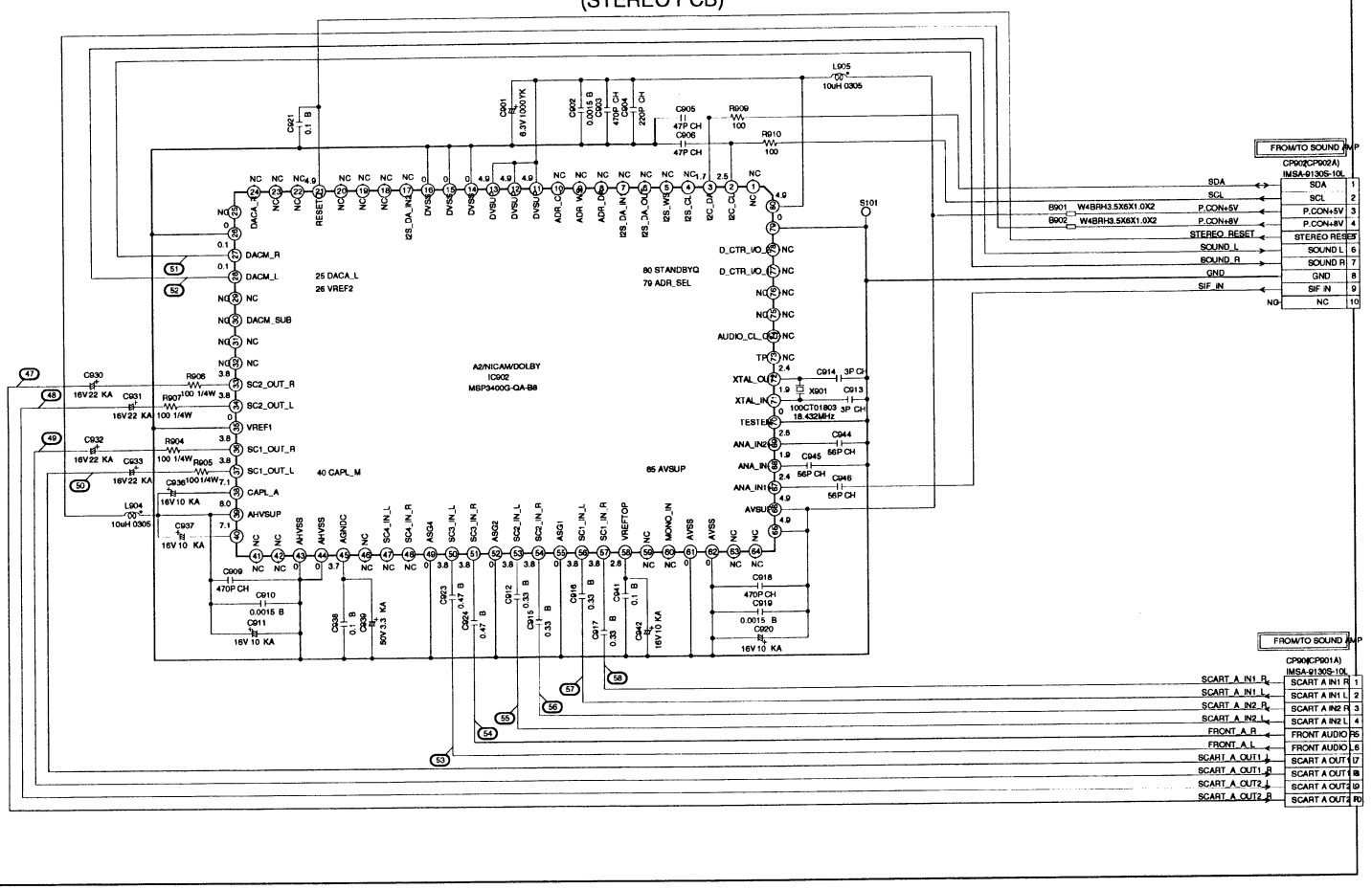
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: POUR DES PIECES REPAREES PARTICULIEREMENT IMPORTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES

CAUTION: FOR SAFETY, USE ONLY THESE PARTS MARKED Δ ARE CRITICAL FOR SAFETY. USE ONES DESCRIBED IN PARTS LIST ONLY

STEREO SCHEMATIC DTAGRAM

(STEREO PCB)

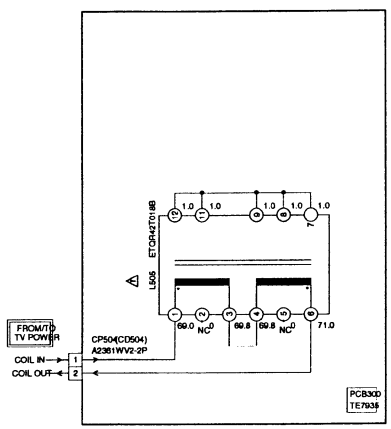


NOTETHIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL

CHOKE COIL SCHEMATIC DIAGRAM

(FILTER PCB)



NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

ATTENTION: LES PIECES REPAREES PEUVENT ETANT DANGEREUSES AN POINT DE VUE SECURITE NUTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES RIECES

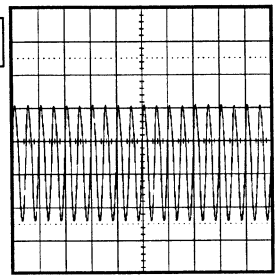
CAUTION: SINCE THESE PARTS MARKED ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY

WAVEFORMS

MICON/TUNER/T'TEXT

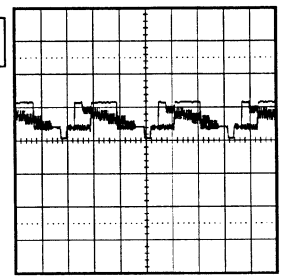
0.5µs
1.00V

①



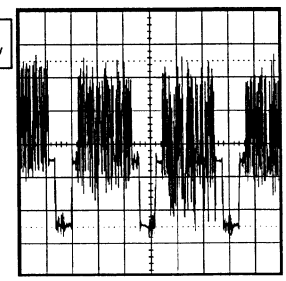
20µs
1.00V

⑬



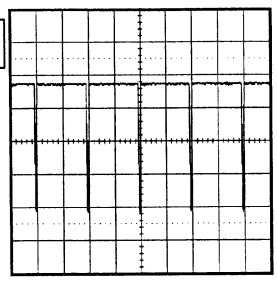
20µs
100mV

⑱



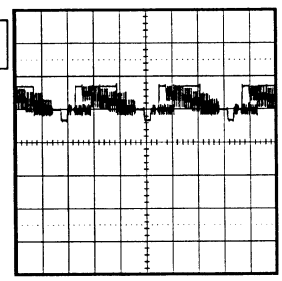
10ms
1.00V

②



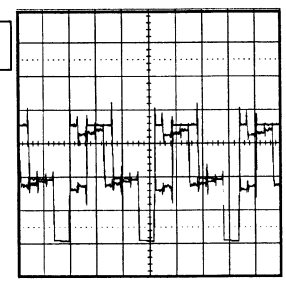
20µs
1.00V

⑭



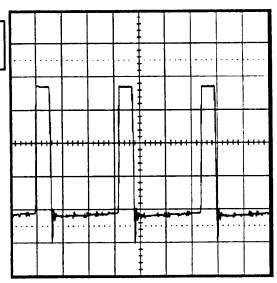
20µs
1.00V

⑲



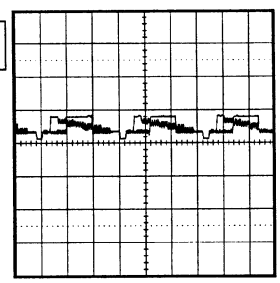
20µs
1.00V

③



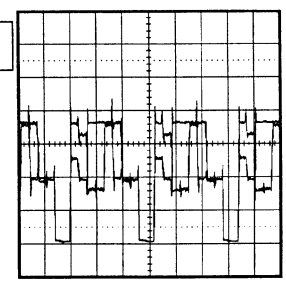
20µs
1.00V

⑮



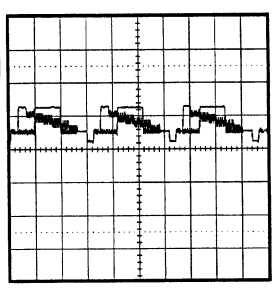
20µs
1.00V

⑳



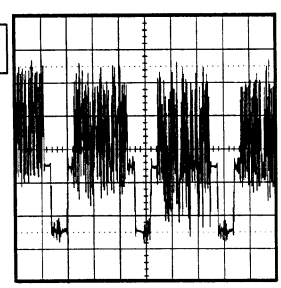
20µs
1.00V

④



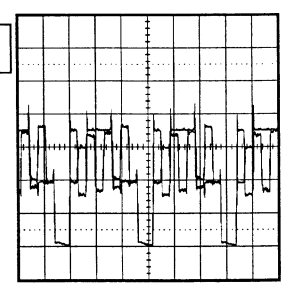
20µs
100mV

⑯



20µs
1.00V

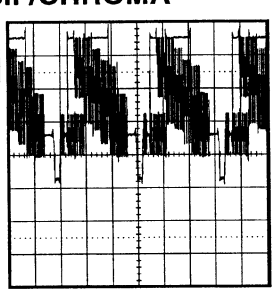
㉑



VIF/SIF/CHROMA

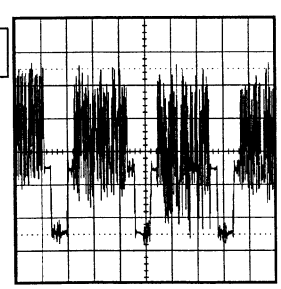
20µs
0.50V

⑪



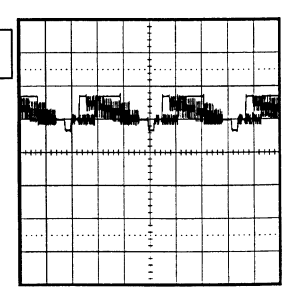
20µs
1.00V

⑰



20µs
1.00V

㉒

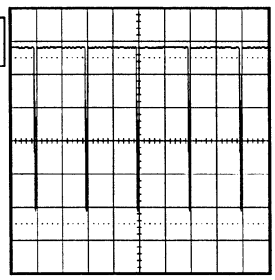


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

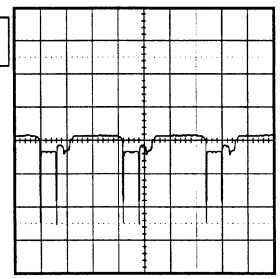
10ms
1.00V

(23)



20µs
5.0V

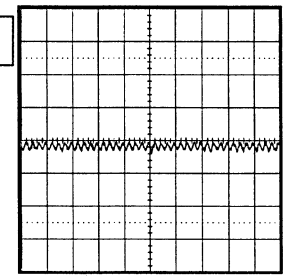
(37)



SOUND AMP

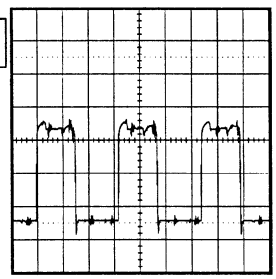
2ms
0.50V

(42)



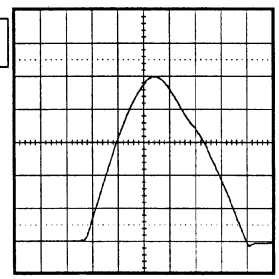
20µs
200mV

(24)



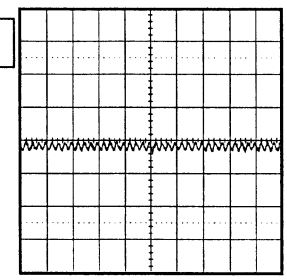
2µs
200V

(38)



2ms
0.50V

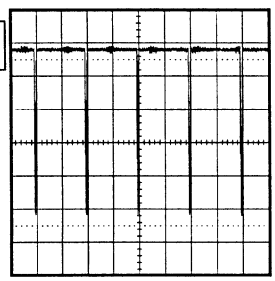
(43)



DEFLECTION/CRT

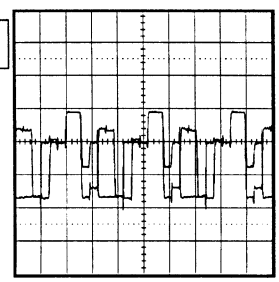
10ms
1.00V

(33)



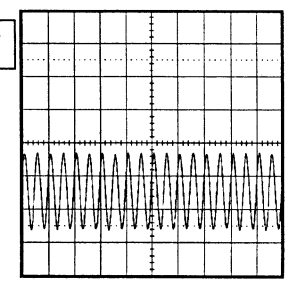
20µs
50V

(39)



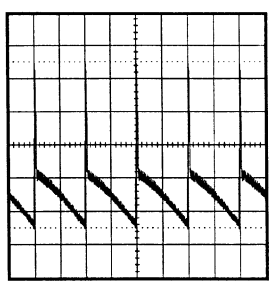
0.2ms
5.0V

(44)



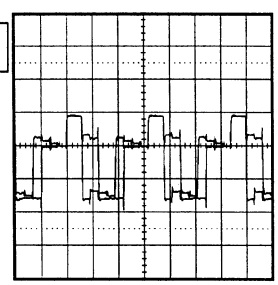
10ms
10.0V

(35)



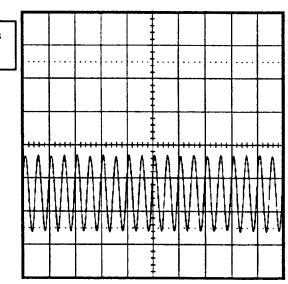
20µs
50V

(40)



0.2ms
5.0V

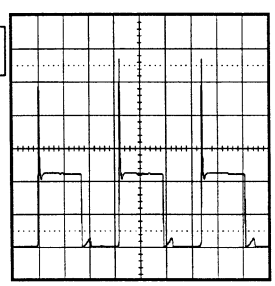
(45)



STEREO

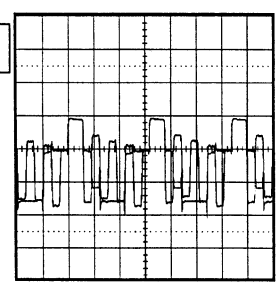
20µs
10.0V

(36)



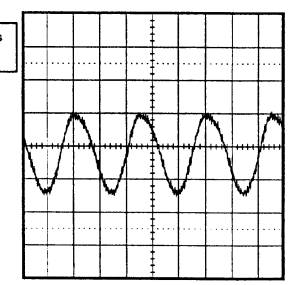
20µs
50V

(41)



0.2ms
0.5V

(47)

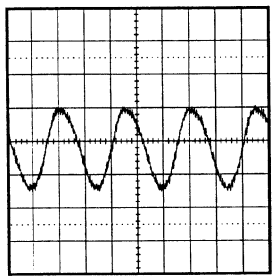


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

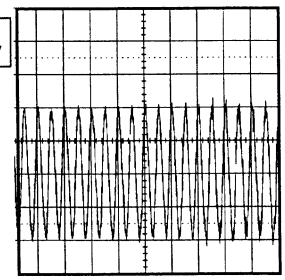
0.2ms
0.5V

(48)



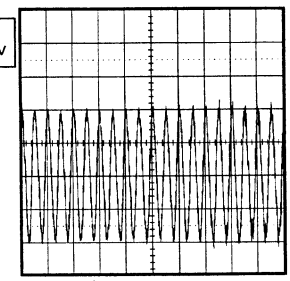
0.2ms
200mV

(53)



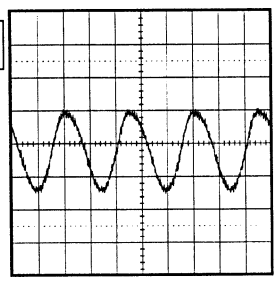
0.2ms
200mV

(58)



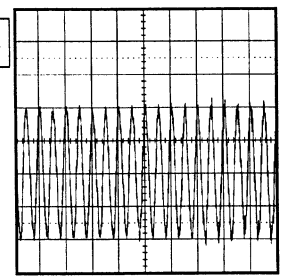
0.2ms
0.50V

(49)



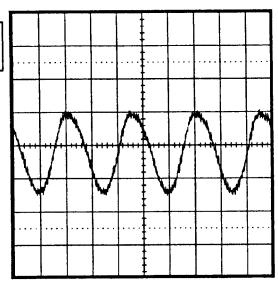
0.2ms
200mV

(54)



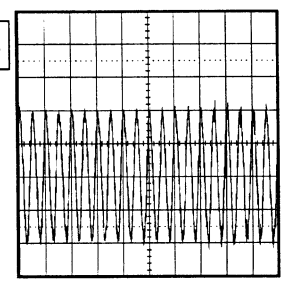
0.2ms
0.50V

(50)



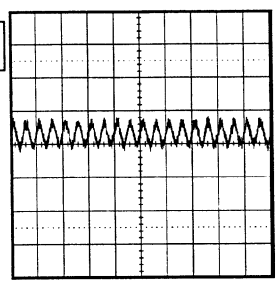
0.2ms
200mV

(55)



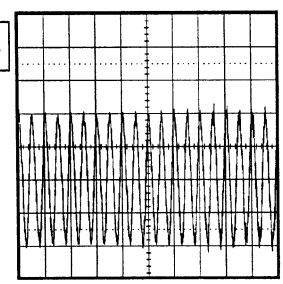
0.2ms
100mV

(51)



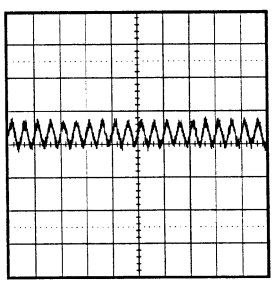
0.2ms
200mV

(56)



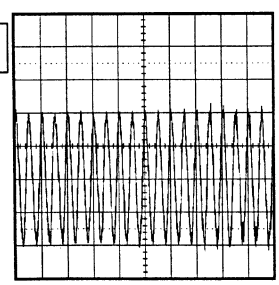
0.2ms
100mV

(52)



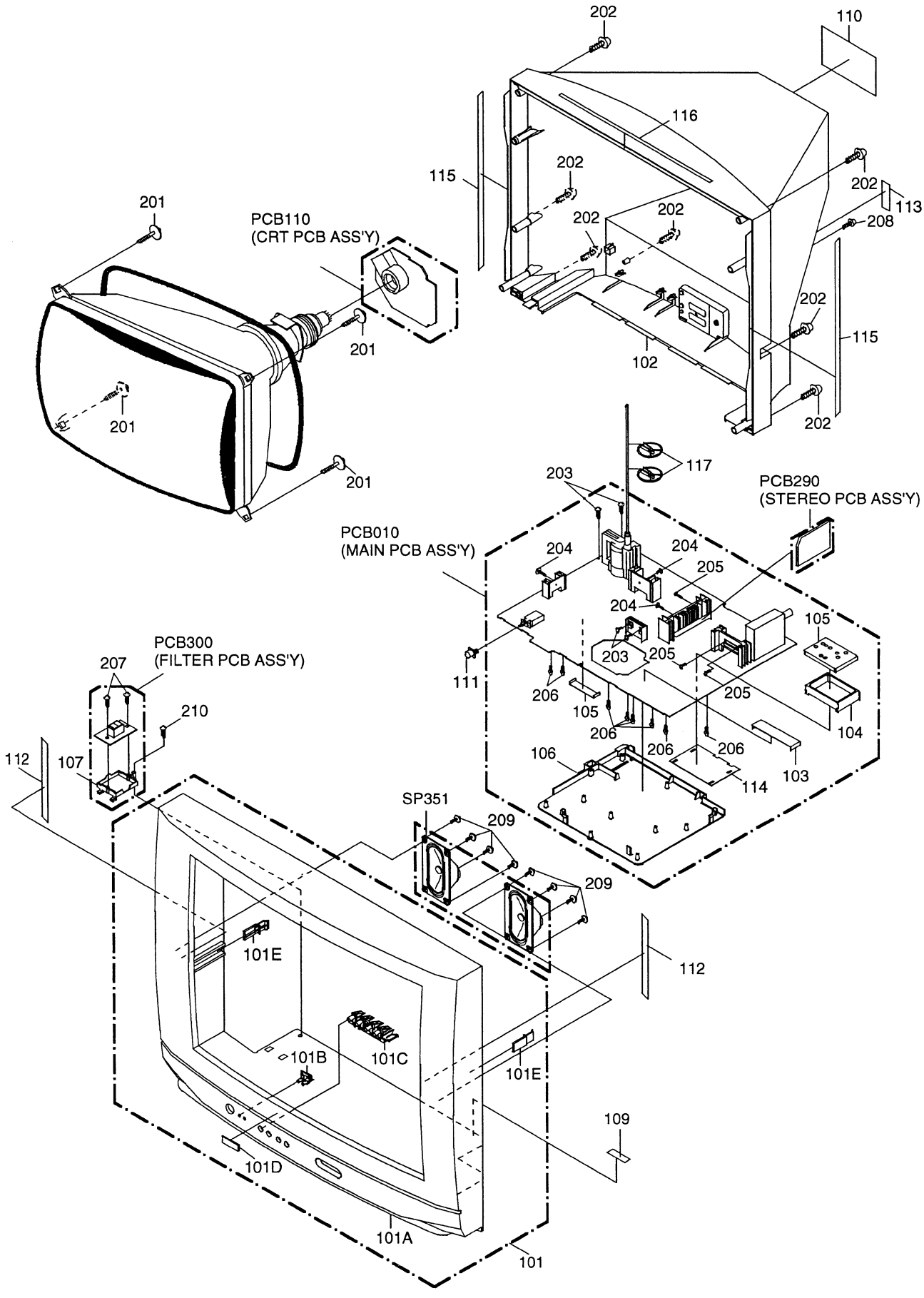
0.2ms
200mV

(57)



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
101	7A701A005A	CABINET,FRONT ASSY		
101A	701UPJA138	CABINET,FRONT		
101B	713UPA0024	GUIDE,REMOCON		
101C	738UPBA006	BUTTON,FRAME		
101D	7232020561	BADGE,BRAND		
101E	709WPA0023	CABINET,HOLDER		
102	A3P701K740	CABINET,BACK ASS'Y		
103	752WSA0087	SHIELD,IC		
104	752WSAA008	SHIELD,CASE		
105	752WSAA013	SHIELD,LID		
106	755WPAA016	COVER,PCB		
107	761WPA0298	HOLDER,TRANS		
108	899HV3T000	HOLDER,ANODE WIRE		
109	722000A111	SHEET,PTB		
110	722202A774	SHEET,RATING		
111	735UPBA020	BUTTON,POWER		
112	800UQ00010	FELT,SHEET		
113	723000C402	SHEET,JACK		
114	752WSAA006	PLATE,SHIELD		
115	800WQ0A054	FELT,SHEET		
116	800WQ0A071	FELT,SHEET		
201	8111J50D05	SCREW,TAPPING(A)	GW22	5x35
202	8117540B04	SCREW,TAPPING(B0)	TRUSS	4x20
203	8110630A04	SCREW,TAP TITE(P)	BRAZIER	3x10
204	8109I30A04	SCREW,TAP TITE(B)	WH7	3x10
205	8107630804	SCREW,TAP TITE(S)	BRAZIER	3x8
206	8109630802	SCREW,TAP TITE(B)	BRAZIER	3x8
207	8110630A24	SCREW,TAP TITE(P)	BRAZIER	3x12
208	8110630804	SCREW,TAP TITE(P)	BRAZIER	3x8
209	8117D30A04	SCREW,TAPPING(B0)	WH8 BRAZIER	3x10
210	8117540A64	SCREW,TAPPING(B0)	TRUSS	4x16
---	791WHAA046	LAMIFLIM BAG		
---	792UHA0169	PACKAGE,TOP		
---	792UHA0170	PACKAGE,BOTTOM		
---	793UCDB269	GIFT BOX		
---	J3P10101B	INSTRUCTION BOOK		
---	JB5X0100	POLYBAG,INSTRUCTION		
---	A3P101M975	INSTRUCTION BOOK KIT		

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
⚠ R402	R3X18A221J	R,METAL OXIDE	220 OHM 2W
⚠ R407	R3X181R68J	R,METAL OXIDE	0.68 OHM 1W
⚠ R419	R3X28B330J	R,METAL OXIDE	33 OHM 3W
⚠ R420	R6558A5R6J	R,FUSE	5.6 OHM 2W
⚠ R424	R3K181102J	R'METAL	1K OHM 1W
⚠ R460	R3X181221J	R,METAL OXIDE	220 OHM 1W
⚠ R464	R3X18A271J	R,METAL OXIDE	270 OHM 2W
⚠ R501	R002T2155J	RC	1.5M OHM 1/2W
⚠ R503	R5X2AE3R9J	R,CEMENT	3.9 OHM 7W
⚠ R504	R3X28BR22J	R.METAL	0.22 OHM 3W
⚠ R509	R63581R22J	R,FUSE	5.6 OHM 2W
⚠ R511	R3X181R15J	R,METAL OXIDE	0.15 OHM 1W
⚠ R521	R3X28B4R7J	R,METAL OXIDE	4.7 OHM 3W
⚠ R527	R002T4244J	RC	240K OHM 1/4W
⚠ R533	R3X28B563J	R,METAL	56K OHM 3W
⚠ R543	R3X28BR22J	R.METAL	0.22 OHM 3W
⚠ R801	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R807	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R813	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠ R819	R6558A1R8J	R,FUSE	1.8 OHM 2W
		CAPACITORS	
C403	E0ELF4222M	CE	2200 UF 35V
C406	C0PWB07H3K	CC	0.0022UF 2KV B
C407	E0ELF3222M	CE	2200 UF 25V
C409	E62DFD100M	CE	10 UF 250V
C411	P3N1F5333J	CPP	0.033 UF 630V
C423	E02L04102M	CE	1000 UF 35V
C424	P4N8FK472H	CMPP	0.0047UF 1.5KV
C426	P4N8FJ272H	CMPP	0.0027UF 1.25KV
C434	P4N8FJ912H	CMPP	0.0091UF 1.25KV
C437	P4J7F3334J	CMPP	0.33 UF 250V PMS
C447	C0PLRR713K	CC	0.001 UF 2KV R
⚠ C501	P2472B224M	CMP	0.22UF 275V PHE840
C504	E62DFB470M	CE	47 UF 160V
C505	E52D0H221M	CE	220 UF 400V
C506	C0JBB0713K	CC	0.001 UF 2KV B
C507	C0JBB0713K	CC	0.001 UF 2KV B
⚠ C508	CD39E0MH3M	CC	0.0022UF 250V
C509	E62NFB221M	CE	220 UF 160V
C511	E02LF2222M	CE	2200 UF 16V
C515	E5EZF3222M	CE	2200 UF 25V
C517	C03L0R7B3K	CC	0.0012UF 2KV R
⚠ C525	CD39E0M13M	CC	0.001 UF 250V
⚠ C526	P2472B104M	CMP	0.1 UF 275V PHE840
⚠ C527	CD39B0MQ2K	CC	470 PF 250V
C531	E5EZF4102M	CE	1000 UF 35V
C536	P3N1F5103J	CPP	0.01 UF 630V
C537	C0PLRR7Q2K	CC	470 PF 2KV R
C539	C0PLRR712K	CC	100 PF 2KV R
C801	C03L0R7H3K	CC	0.0022UF 2KV R
C901	E02L00102M	CE	1000 UF 6.3V
C1004	E02LF3102M	CE	1000 UF 25V
C1009	E02LF3102M	CE	1000 UF 25V
		DIODES	
D001	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D101	0021721150	LED	SLR-342VCT32
D102	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D105	D1VT001330	DIODE,SILICON	1SS133T-77
D108	D1VT001330	DIODE,SILICON	1SS133T-77
D401	D2WT011E10	DIODE SILICON	11E1-EIC
D402	D2CF0715L0	DIODE SILICON	ERD07-15L50
D403	D97U02201B	DIODE ZENER	MTZJ22B T-77
D404	D2WT011E10	DIODE SILICON	11E1-EIC
D405	D2WTAU02A0	DIODE SILICON	AU02A-EIC
D406	D2WT011E10	DIODE SILICON	11E1-EIC
D407	D2CF2016L0	DIODE SILICON	FE201-6L49
D408	D1VT001330	DIODE,SILICON	1SS133T-77
D409	D97U02701B	DIODE,ZENER	MTZJ27B T-77
D410	D2WTAU02A0	DIODE SILICON	AU02A-EIC
D411	D2WT011E10	DIODE SILICON	11E1-EIC
D412	D2WTAU02A0	DIODE SILICON	AU02A-EIC
D413	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D414	D97U03001B	DIODE,ZENER	MTZJ30B T-77
D415	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D416	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D418	D2WTAU02A0	DIODE SILICON	AU02A-EIC
⚠ D501	D2WTRM11C0	DIODE SILICON	RM11C-EIC

REF. NO.	PART NO.	DESCRIPTION	
		DIODES	
⚠ D502	D2WTRM11C0	DIODE SILICON	RM11C-EIC
⚠ D503	D2WTRM11C0	DIODE SILICON	RM11C-EIC
⚠ D504	D2WTRM11C0	DIODE SILICON	RM11C-EIC
D505	D2WT011E10	DIODE SILICON	11E1-EIC
D506	D1VT001330	DIODE,SILICON	1SS133T-77
D507	D2WXN49370	DIODE SILICON	1N4937
D508	D1VT001330	DIODE,SILICON	1SS133T-77
D510	D1VT001330	DIODE,SILICON	1SS133T-77
D511	D97U01501B	DIODE,ZENER	MTZJ15B T-77
D512	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D513	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D514	D1VT001330	DIODE,SILICON	1SS133T-77
D515	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D516	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D517	D2WXN49370	DIODE SILICON	1N4937
D518	D97U07R51B	DIODE,ZENER	MTZJ7.5B T-77
D519	D1VT001330	DIODE,SILICON	1SS133T-77
D520	D28F30DF60	DIODE RECTIFIER	30DF6-FC
D521	D1VT001330	DIODE,SILICON	1SS133T-77
D522	D97U02201B	DIODE ZENER	MTZJ22B T-77
D523	D2WXRU2AM0	DIODE SILICON	RU2AM-EIC
D525	D2WT011E10	DIODE SILICON	11E1-EIC
D526	D28F30DF60	DIODE RECTIFIER	30DF6-FC
D528	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D601	D97U09R11B	DIODE,ZENER	MTZJ9.1B T-77
D603	D1VT001330	DIODE,SILICON	1SS133T-77
D604	D2WT011E10	DIODE SILICON	11E1-EIC
D606	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D607	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D608	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D609	D1VT001330	DIODE,SILICON	1SS133T-77
D610	D1VT001330	DIODE,SILICON	1SS133T-77
D611	D1VT001330	DIODE,SILICON	1SS133T-77
D612	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D712	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D723	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D801	D1VT001330	DIODE,SILICON	1SS133T-77
D802	D1VT001330	DIODE,SILICON	1SS133T-77
D803	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
IC101	I5PD0F008B	IC	OECF008B
IC102	IC7J0311A0	IC	R3111N311A/C-TR
IC199	A3P701K015	IC	S-24C04BFJ-TB
IC201	I0WDE2248C	IC	STV2248C
IC401	I0WTE93060	IC	STV9306
IC403	I1KA97812A	IC	KIA7812API
IC501	I2BT0853N0	IC	STR-W6853N
IC502	I1KA978R08	IC	KIA78R08PI
⚠ IC503	I1KA978R06	IC	KIA78R06PI
⚠ IC506	0002E00610	PHOTO COUPLER	LTV-817M-VB
IC702	I0UF015010	IC	MM1501XNRE
IC902	I19FF34000	IC	MSP3400G-QA-B8
IC1001	I0FSP52760	IC	AN5276
		TRANSISTORS	
Q103	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q201	T8AA03881S	TRANSISTOR SILICON	KTC3881S-RTK
Q202	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q204	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q301	T8AA03881S	TRANSISTOR SILICON	KTC3881S-RTK
Q401	TDUF024990	TRANSISTOR SILICON	2SD2499
Q402	TC5T01627Y	TRANSISTOR SILICON	2SC1627_Y(TPE2)
Q503	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q505	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q507	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q510	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q511	TAAT01281Y	TRANSISTOR SILICON	KTA1281_Y
Q513	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q514	TCAT032070	TRANSISTOR SILICON	KTC3207-AT
Q601	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q602	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q603	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q609	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q701	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q702	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q703	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q704	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q711	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
Q801	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
Q802	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
Q803	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
Q804	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
Q805	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
Q806	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
Q1001	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
Q1002	T8YJ2412K0	TRANSISTOR SILICON	2SC2412KT146 R,S
		COILS &TRANSFORMERS	
L001	02167F100J	COIL	10 UH
L101	02167F100J	COIL	10 UH
L102	02167F100J	COIL	10 UH
L202	033700005R	COIL,VIDEO IFT	3700005
L203	021LA62R2K	COIL	2.2 UH
L204	021LA6120J	COIL	12 UH
L206	021LA6R22M	COIL	0.22 UH
L207	021LA6100J	COIL	10 UH
L208	02167F3R3J	COIL	3.3 UH
L301	021LA62R2K	COIL	2.2 UH
L302	021LA6R22M	COIL	0.22 UH
L303	021LA61R0M	COIL	1 UH
L402	02D3000057	COIL CHOKE	ELC18B501LN
L403	022100037A	COIL,LINEARITY	ELH5L4144N
⚠ L501	029X000096	COIL,LINE FILTER	SS28H-10250
⚠ L503	028R280003	COIL,DEGAUSS	8R280003
L504	02AHB0A0A4	CORE,FERRITE	W5T_20*10*10A
⚠ L505	02D1000060	COIL CHOKE	ETQR42T018B
L601	02167F100J	COIL	10 UH
L701	021LA6220J	COIL	22 UH
L702	021LA6220J	COIL	22 UH
L703	021LA6220J	COIL	22 UH
L705	021LA6220J	COIL	22 UH
L706	021LA6220J	COIL	22 UH
L707	021LA6220J	COIL	22 UH
L708	021LA6220J	COIL	22 UH
L709	021LA6220J	COIL	22 UH
L710	021LA6220J	COIL	22 UH
L711	021LA6220J	COIL	22 UH
L713	02167F100J	COIL	10 UH
L715	021LA6220J	COIL	22 UH
L716	021LA6220J	COIL	22 UH
L717	021LA6100J	COIL	10 UH
L801	02167F101J	COIL	100 UH
L802	02167D151K	COIL	150 UH
L803	02167D151K	COIL	150 UH
L804	02167D151K	COIL	150 UH
L904	02167F100J	COIL	10 UH
L905	02167F100J	COIL	10 UH
T401	0450190161	TRANS,HORIZONTAL DRIVE	ETH19Y203AY
⚠ T501	0481400714	TRANSFORMER,SWITCHING	81400714
		JACKS	
J701	063G100041	SOCKET,21PIN	035_0_8083_00
J702	060J131015	HEADPHONE JACK	MSJ-2000
J703	060G401047	RCA JACK	HTJ-032-03AY
J704	060G401046	RCA JACK	HTJ-032-03AW
J705	060G401039	RCA JACK	HTJ-032-03AR
⚠ J801	066C130017	SOCKET,CATHODE RAY TUBE	CVT3275-5101
		SWITCHES	
SW102	0504201T31	SWITCH,TACT	SKHVBED010
SW104	0504201T31	SWITCH,TACT	SKHVBED010
SW106	0504201T31	SWITCH,TACT	SKHVBED010
SW107	0504201T31	SWITCH,TACT	SKHVBED010
⚠ SW501	0530105019	SWITCH	ESB92S22B
		VARIABLE RESISTOR	
VR501	V116313BTC	VOLUME,SEMI FIXED	EVNCYAA03B13
		P.C.BOARD ASSEMBLIES	
PCB010	A3P701K010K	PCB ASS'Y	TMC590A
PCB110	A3P701K110K	PCB ASS'Y	TCC447A
PCB290	A3P701K290K	PCB ASS'Y	TEAA89A
PCB300	A3P701K300K	PCB ASS'Y	TE7935A
		MISCELLANEOUS	
B501	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B504	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B602	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B701	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B702	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B703	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0

REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
B901	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B902	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
BT001	1412004013	BATTERY,MANGAN	R03(AB)2PXGPI
BT002	1412004013	BATTERY,MANGAN	R03(AB)2PXGPI
⚠ CD501	1206459803	CORD AC BUSH	6459803
CD502	06CH822001	CORD CONNECTOR	CH822001
CD801	1278280010	BRAIDED WIRE	SM2099-001
CD802	WCL6848038	FLAT CABLE AWM2468	AWG26 5C GRAY 480MM
CD803	WBL6040038	FLAT CABLE AWM2468	AWG26 4C BLACK 400MM
CF201	1012T5R503	FILTER,CERAMIC TRAP	TPS5.5MB-TF21
CF202	102E038R9B	FILTER,SAW	K3953M
CF204	1012T03101	FILTER CERAMIC TRAP	MKT31.9MA110P-TF
CF301	1022133R41	FILTER,SAW	SAFGM33M4VC0Z00B03
CF303	1012T04001	FILTER,CERAMIC TRAP	MKT40.4MA110P-TF
CP001	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP101	069X160379	CONNECTOR PCB SIDE	06JQ-ST
CP401	069X460029	CONNECTOR PCB SIDE	B06B-DVS
CP502	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP504	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP801	069S330010	CONNECTOR PCB SIDE	A2361WV2-3P
CP806	069W010010	CONNECTOR PCB SIDE	005P-2100
CP901	069J1A0048	CONNECTOR PCB SIDE	IMSA-9130S-10L
CP902	069J1A0048	CONNECTOR PCB SIDE	IMSA-9130S-10L
CP1001	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP802A	067U005049	WIRE HOLDER	B2013H02-5P
CP802B	067U005049	WIRE HOLDER	B2013H02-5P
CP803A	067U004029	WIRE HOLDER	B2013H02-4P
CP803B	067U004029	WIRE HOLDER	B2013H02-4P
CP901A	069J1A0038	CONNECTOR PCB SIDE	IMSA-9130B-10
CP902A	069J1A0038	CONNECTOR PCB SIDE	IMSA-9130B-10
EL001	124120301A	EYE LET	XRY20X30BD
EL002	124116281A	EYE LET	XRY16X28BD
⚠ F501	080NT04004	FUSE	50T040H
⚠ FB401	043228007F	TRANSFORMER,FLYBACK	3228007F
FH501	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	06710T0009	HOLDER,FUSE	EYF-52BCY
OS101	0773071001	REMOTE RECEIVER	RPM7138-WH5
⚠ RY501	0560V20115	RELAY	ALKS321
⚠ SP351	070C555007	SPEAKER	SG05B01BWA
⚠ TH501	D8E080A100	DEGAUSS ELEMENT	B59209-J80-A10
TM101	076N0GE040	TRANSMITTER	RC-GE040
TU001	0145517007	TUNER,VHF-UHF	TUWRF4EG-778F2A
⚠ V801	098A280501	CRT W/DY	A66QEW13X48
X101	100CT4R013	CRYSTAL	HC-49/U-S
X601	100CT4R408	CRYSTAL	HC-49/U
X901	100CT01803	CRYSTAL	HC-49/U-S

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

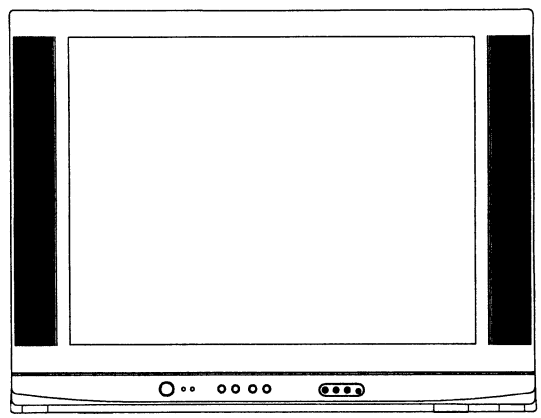
SPEC.NO.	M3P7-01K
O/R NO.	U413501

ORION

TV-719

SERVICE MANUAL

COLOR TELEVISION RECEIVER



SUPPLEMENT
CHASSIS CODE A

This SUPPLEMENT must be used together SERVICE MANUAL for TV-719 SI.
All other test and repair procedures are as shown in the ORIGINAL MANUAL.
Please file this SUPPLEMENT with the ORIGINAL VERSIONS.

Design and specifications are subject to change without notice.

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	TV-719 SI		TV-719	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
TM101	076N0GE040	TRANSMITTER RC-GE040	076N0GE020	TRANSMITTER RC-GE020

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	TV-719 SI		TV-719	
	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
101	7A701A005A	FRONT,CABI ASS'Y	7A701A143A	FRONT,CABI ASS'Y
101A	701UPJA138	CABINET,FRONT	701UPJA146	CABINET,FRONT
101C	738UPBA006	BUTTON,FRAME	738UPA0004	BUTTON,FRAME
102	A3P701K740	CABINET,BACK ASS'Y	A3P712K740	CABINET,BACK ASS'Y
110	722202A774	SHEET,RATING	722202A825	SHEET,RATING
111	735UPBA020	BUTTON,POWER	735UPA0101	BUTTON,POWER
---	793UCDB269	GIFT BOX	793UCDB355	GIFT BOX

SPEC.NO.	M3P7-12K
O/R NO.	U463563